Retain super-techs with a two-track career path. PAGE 39 Spreadsheets may be a Sarbanes-Oxley liability. PAGE 46

COMPUTERWORLD

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MAY 24, 2004 • VOL. 38 • NO. 21 • $5/COPY

Theft of Cisco Source Code Stirs Fears of Security Threat

Vendor's reticence leaves users uneasy about extent of risk

BY JAIKUMAR VIJAYAN

The theft of proprietary operating system source code from Cisco Systems Inc. poses a potentially serious security threat to corporate networks that use the company's technology, users and analysts said.

And the paucity of information released by the networking giant in the wake of last week's disclosure that the code had been stolen is raising troubling questions about what exactly happened and the real extent of the compromise, they added.

"We are all waiting to hear what Cisco has to say," said Stephen Smith, network manager at Keystone Mercy Health Plan in Philadelphia.

Cisco has been "unnaturally and unproductively quiet," added John Pescatore, an analyst at Gartner Inc. "That gives the impression that they are still unsure about the scope of the breach. Or they are sure, and it's much

Cisco Code, page 55

ONLINE
The FBI confirmed that it's working with Cisco on the case: QuickLink 46959

CA Takes Next Step With On-Demand

Will debut Sonar tools at CA World this week

BY MATT HAMBLEN

At its annual user conference this week, Computer Associates International Inc. will announce an initial set of four management software modules that use the Sonar on-demand computing technology detailed by the company last July.

One of the Sonar-based products, a tool called eTrust Network Forensics that can identify links between IT infrastructure devices from a security perspective, was quietly shipped last December but has yet to be formally announced. The other modules are due to become available this summer or in the fall.

Sonar was designed to add increased automation capabilities to CA's security, storage, network and application performance management product lines and to

CHARLES KRUSE may try SmartBPV.

Sonar, page 55

NEWSPAPER

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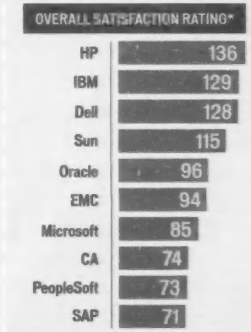
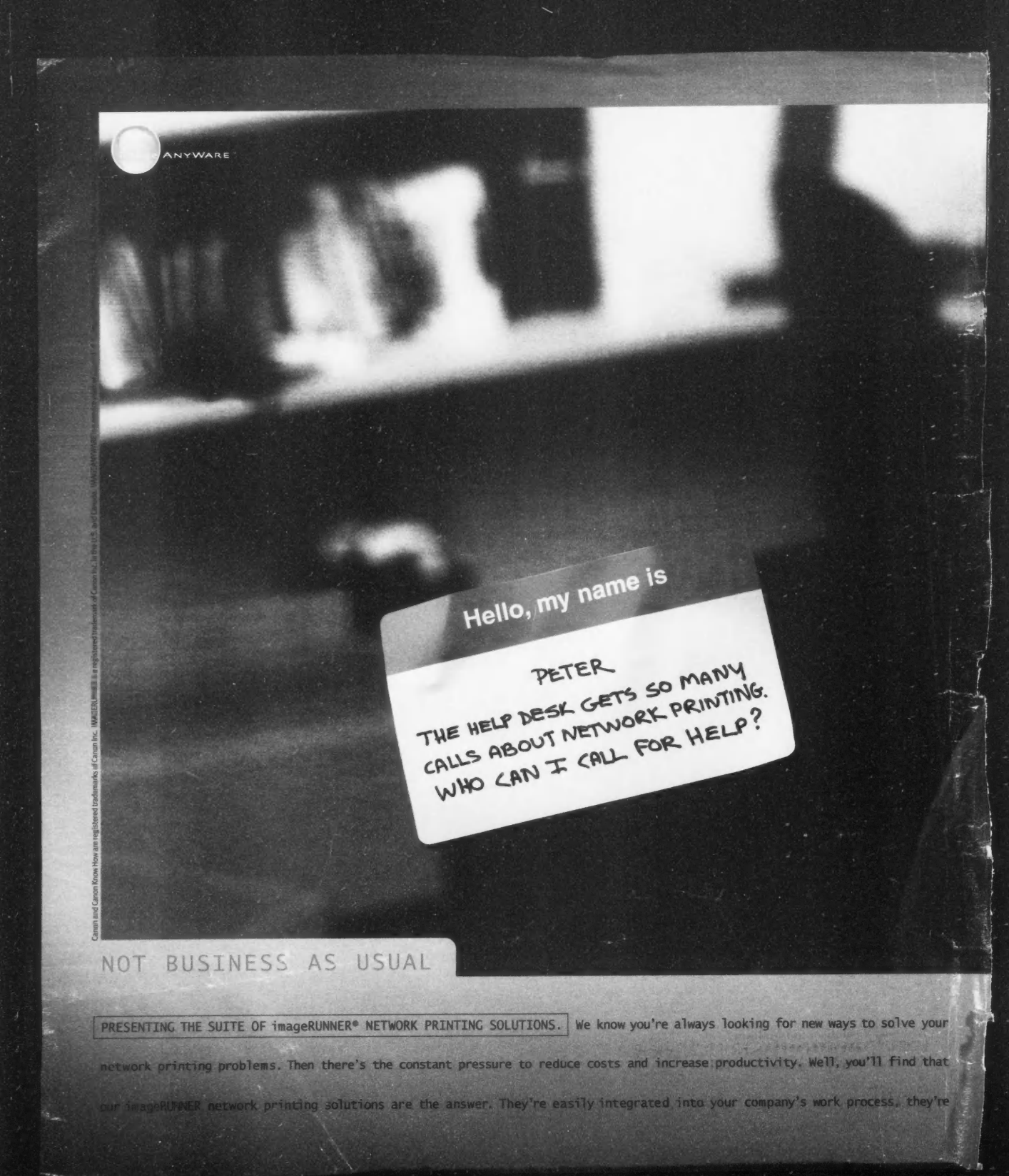
Joined at the Hip

Customer satisfaction is dependent on much more than objective factors like price and product quality. Increasingly, IT professionals expect their vendors to pass muster on less tangible criteria, like a determination to work together as partners for the long haul. **Patrick Thibodeau** examines the new dynamics of deal-making in our **special report beginning on page 6.**



Customer satisfaction data from a survey of 1,188 managers by *Computerworld* and InterUnity Group. *See page 11 for explanation of rating index.

INSIDE
- How the BBC is negotiating a $3.6B outsourcing deal. Page 7
- Customer satisfaction? Not with Microsoft's SA program. Page 10
- Computerworld/InterUnity Group survey methodology. Page 11



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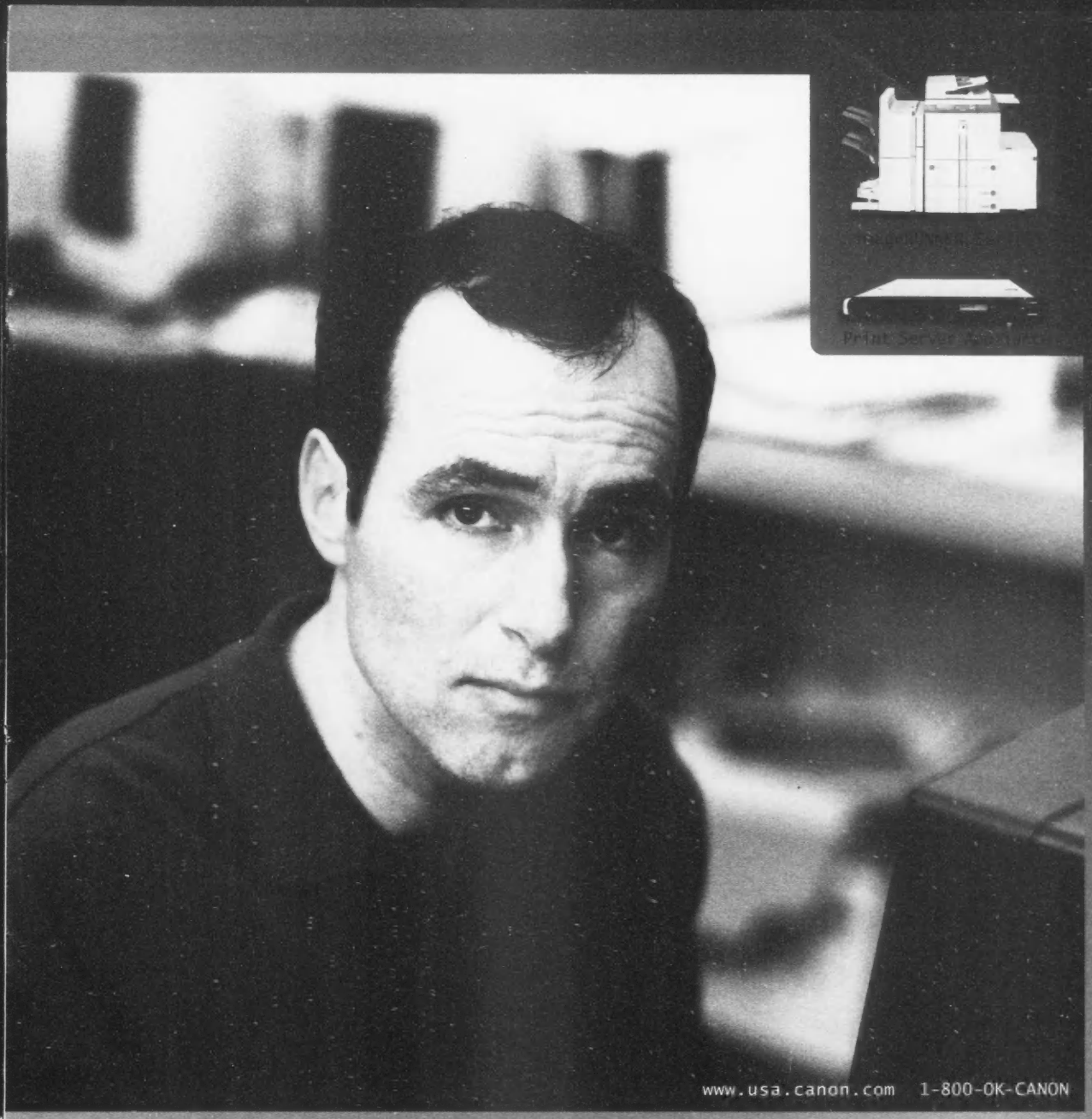

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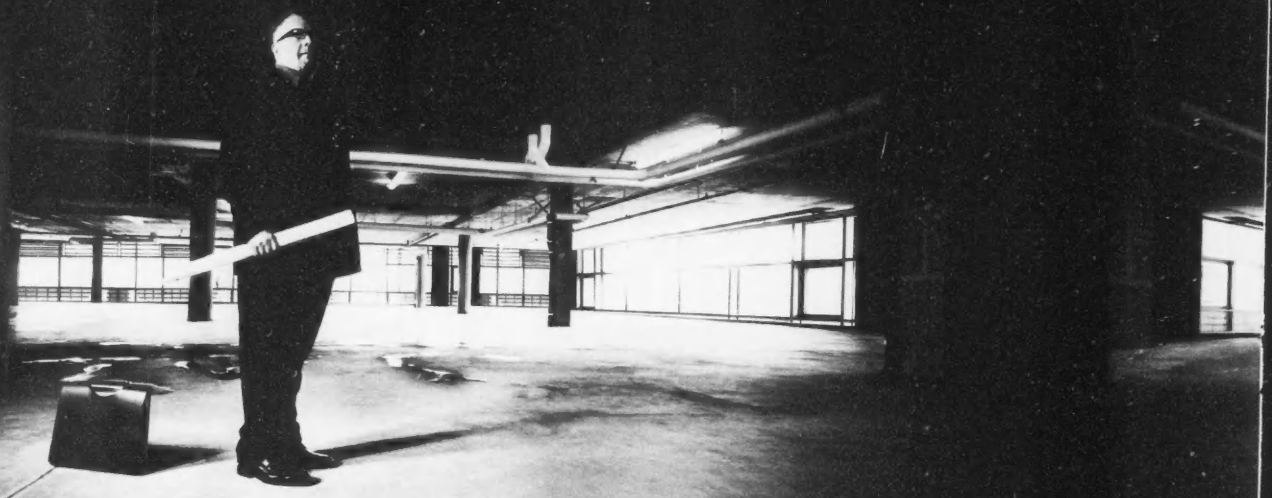

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Marketing Gets With the Program

In the Technology section: Marketing relationship management software helps users such as ESRI's Linda Hecht (left) automate and analyze marketing efforts. But deployment challenges are both technical and cultural. **Page 21**

Opteron Leads 64-bit Revolution

Also in the Technology section: Hector Ruiz (left), CEO of AMD, says Opteron is changing the industry-standard server. With the introduction of Intel's 64-bit extension chip this summer, vendors expect to ship more and more boxes with either Opteron or Intel's version of the x86. All users will need are the applications. **Page 26**

NEWS

Joined at The Hip

Customer satisfaction depends on more than price and return on investment. Users aren't just buying products and services; they're buying a relationship, Patrick Thibodeau finds. Page 8

12 **EMC aims at branch offices** with data backup needs by offering a low-end network-attached storage gateway and an entry-level disk array.

12 **PeopleSoft's initiative** to make its business applications easier to install and use is paying off, say some users.

14 **A security flaw** in some Wi-Fi wireless LANs poses little threat, say IT managers, as long as companies have the right skills and have shielded their networks well.

14 **Wal-Mart revises its RFID** deadline for 2005 and says its top suppliers will be tagging only 65% of their product cases by January.

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16 **Maryfran Johnson** wonders if readers care that the strict guidelines about the placement of advertising and editorial content in print are ignored on the Web.

16 **Pimm Fox** predicts that music stores will be empty shells within a decade. And the music industry still doesn't know how to cope with that.

17 **Michael Gartenberg** says that although it isn't perfect, the ThinkPad X40 is one of the best notebooks he's ever used.

38 **Tommy Peterson** writes that knowledge-based software changes the way users think about problems.

48 **Paul M. Ingevaldson** says you don't have IT projects; you have business projects. The CIO of Ace Hardware says IT alignment comes when the entire business shares responsibility.

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QuickPoll Results

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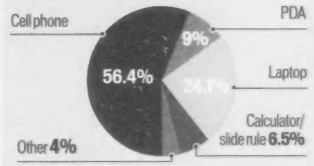

Take this week's QuickPoll at **www.computerworld.com.**

SOURCE: COMPUTERWORLD.COM NONSCIENTIFIC SURVEY, 631 VOTES

Audit-Proof Your Infrastructure

SECURITY: Help your company get through the audit process with these five tips from Jonathan Wolf, co-founder and executive vice president of Gold Wire Technology Inc. **QuickLink 46007**

User-Level Memory Management

DEVELOPMENT: This excerpt from *Linux Programming by Example: The Fundamentals* explains memory management and the Linux/Unix address space. **QuickLink 46780**

How to Plan for Data Migration

BUSINESS INTELLIGENCE: Two Avanade consultants suggest steps you should take before moving or consolidating critical data. **QuickLink 47002**

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New Dynamics Of Deal-Making

It's not just about products and prices. Users want commitment. By Patrick Thibodeau

WHEN HIS 4-year-old Hewlett-Packard server died recently, Steve Brown thought that moving his data replication software to a new two-way HP server would be simple. Was he ever wrong.

Brown, vice president of IT at ECMD Inc., a building components manufacturer in North Wilkesboro, N.C., said the software vendor, whom he declined to name, told him his licensing fee would be bumped up by $25,000. The reason, the vendor said, was that the software pricing was now based on processor speed, and Brown's new two-way server was at least three times faster than the old one. Brown was incredulous. "I told them it was ridiculous to pay a dime," he said.

After a lot of negotiation, Brown got the vendor down to a $7,000 increase. But it still left a bad taste in his mouth. "I think it's gotten more complicated for you to buy [software], and more complicated for you to maintain what you've bought," he said.

Indeed, many users complain that dealing with vendors is becoming more complex as new pricing and licensing models emerge and outsourcing options gain prominence. And according to the results of a survey of nearly 1,200 IT and business managers conducted by *Computerworld* and InterUnity Group Inc., their biggest beef is with software vendors. The highest customer satisfaction ratings went to vendors with large hardware product lines as well as software, like HP and IBM.

Still smarting from the technology spending downturn, vendors are finding they have to work hard to gain the business of a demanding and selective user community. Users not only want to reduce the number of vendors they deal with; they want those vendors to demonstrate a long-term commitment to working with them to boost their bottom lines.

Price remains important, but it's not the only thing Ron Calderone wants to discuss. The CIO at Reliant Pharmaceuticals Inc. in Liberty Corner, N.J., Calderone sees vendors as strategic business partners, and he has a list of criteria they must meet, among them adoption of acceptable service-level agreements (SLA), adherence to standards and integration with existing platforms. Calderone also wants to hear about each vendor's strategic vision and plan for executing it.

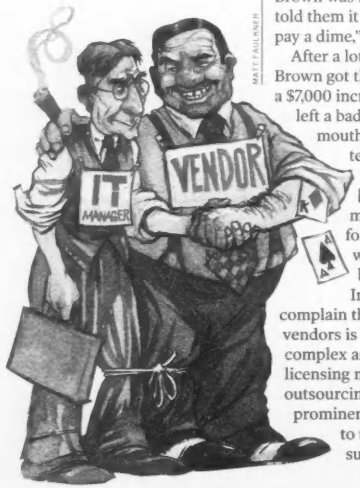
"If they really don't know where they're going, then why would you want to follow them?" said Calderone.

Ben Glicher, chief technology officer at EquiLend Holdings LLC in New York, sought an SLA calling for 99.9% uptime in his managed services contract with San Francisco-based Totality Corp. His contract includes financial penalties and an ever-present threat of termination under a hybrid management model that involves direct day-to-day interaction with the vendor.

"One of the cornerstones for a successful relationship is having really tight SLAs that you can stay on top of," Glicher said, adding that the strict

"One of the cornerstones for a successful relationship is having really tight SLAs that you can stay on top of.

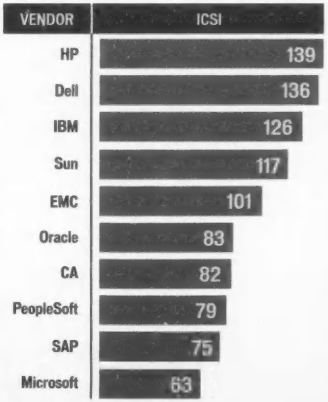
BEN GLICHER, CTO, EQUILEND HOLDINGS LLC



MATT FAULKNER

Licensing Policies

Note: The **ICSI** number is the vendor's **InterUnity Customer Satisfaction Index** score. It is based on the percentage of survey respondents who rated the vendor as "excellent," "good," "fair" or "poor" in a particular area. For a more detailed explanation of this rating system, see "Survey Methodology" on page 11.



VENDOR	EXCELLENT	GOOD	FAIR	POOR
HP	20.4%	55.5%	18.6%	5.5%
Dell	20.4%	53.6%	19%	7%
IBM	18.1%	49.9%	23.7%	8.3%
Sun	15.6%	47.2%	27.1%	10.1%
EMC	9.6%	47%	30%	13.3%
Oracle	8.9%	38.3%	31.5%	21.3%
CA	9.8%	37%	30.2%	23%
PeopleSoft	5.8%	39.8%	33.1%	21.3%
SAP	6.4%	36.9%	33.2%	23.5%
Microsoft	10.5%	25.7%	31.2%	32.6%

SOURCE: SURVEY OF 1,188 IT AND BUSINESS EXECUTIVES

PERCENTAGES IN THESE CHARTS MIGHT NOT ADD TO 100% DUE TO ROUNDING.

SLAs have led to even better uptime than he had anticipated. And there's only one reward for good performance: "We renew the contract," he said, noting that EquiLend recently did just that.

Tough Talk

Taking a tough stance with vendors is essential throughout the contract negotiation process, including the introductory phase, many users have found.

For instance, if a vendor says it has 200 customers using a product, Walter Fahey, vice president and CIO at Maimonides Medical Center in New York, said he wants to "see a sheet of paper with 200 clients on it." Fahey doesn't want the vendor's cherry-picked reference accounts. "You've got to twist their arms," he said.

"The vendors need us more than we need them, because there are other IT solutions out there," said Charles Kruse, vice president of IT services at AmeriCredit Corp., an automobile finance company in Arlington, Texas. "Whether they are as good technologically might not matter" because of all the considerations aside from the merit of the technology itself, he added.

Those considerations include knowing when vendors are most likely to be willing to make special concessions.

Kent Brumbaugh, corporate supplier portfolio manager at Huntington Bancshares Inc. in Columbus, Ohio, said vendors are intensely focused on making their quarterly and annual revenue projections. So when he wants to strike a deal, he waits for just the right time.

"They're very proactive at the end of quarters," said Brumbaugh, adding that if changes to a purchase contract are needed, "they're very accommodating."

Bob Venable, manager of enterprise systems at BlueCross BlueShield of Tennessee Inc., said he uses timing with vendors such as IBM to sweeten the pot in negotiations and to do some mutual back-scratching.

"We always look for nonmonetary ways we can help a vendor so that they can help us monetarily," said Venable. "If we know we need something within the next six months but a [vendor] is quarterly-driven, it may mean . . . buying at the end of this month instead of two days into next month."

Such relationship-building is essential, users say. And they expect the vendor to do its part by demonstrating a genuine interest in the customer's business.

Michael Brooks, vice president of information systems and technology at Stock Building Supply, a Raleigh, N.C.-based distributor, recently switched router vendors, moving from Nortel Networks Ltd. to Cisco Systems Inc. Brooks said he felt Cisco was more sincere in wanting to establish a true partnership.

"They courted us for quite a while without [anything on the] sales side [going] to them," Brooks said of Cisco. The vendor's top regional representative met regularly with Brooks, and they would go out to lunch once a quarter to talk about their respective companies. "It was truly, 'We want to learn about you,' " Brooks said, adding that the lack of pressure tactics was refreshing.

"It got to the point . . . where I felt very comfortable talking about our issues, and he was very responsive and the team behind him was very capable," Brooks said.

When Stock Building Supply had a virus on its network, Cisco "came like they were a longtime partner of ours and assisted us, which I appreciated a lot," Brooks said. "That played a lot in our decision to go with them." The change in

Continued on page 10

> **The vendors need us more than we need them, because there are other IT solutions out there.**
>
> **CHARLES KRUSE,** VP OF IT SERVICES, AMERICREDIT CORP.

Matchmaking at the BBC

JOHN VARNEY, the British Broadcasting Corp.'s chief technology officer, is involved in what may be the largest outsourcing deal to be negotiated by any corporation this year. And the closer he gets to picking a vendor, the more the process seems to take on an online-dating air.

The BBC intends to turn over the operations of its 1,400-employee IT arm, BBC Technology, to an outsourcer under a 10-year contract valued at about $3.6 billion. After narrowing an initial list of bidders to nine in February, the BBC earlier this month picked the final three: Accenture Ltd., Computer Sciences Corp. and Siemens Business Services Inc. The winner will be announced in July.

As the arduous process draws to a conclusion, what's becoming very important to Varney are the attributes of the three final bidders' team leaders. "There is going to have to be a chemistry," said Varney, "and an understanding of each other's aims and objectives."

VARNEY says there has to be a "chemistry" with his outsourcing vendor.

The BBC is using a rigorous evaluation process, but subjective elements are clearly rising in importance in comparison with the objective considerations that helped winnow down the initial list.

Objective measures and scoring on criteria such as size, financial strength and understanding of the broadcast market helped the BBC cut the list of vendors from 31 to nine. Subjective measures included a sense of the cultural fit the vendor will have with the BBC.

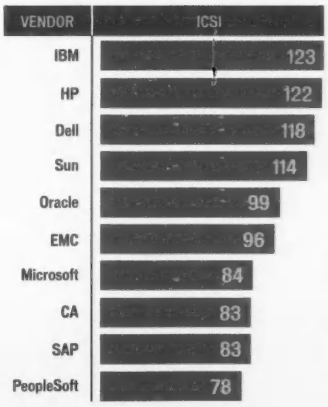
The vendors' references, pricing and feedback from the BBC's user community all remain important factors in the final selection process. But Varney made it clear that the capabilities of the vendors' team leaders are essential to a successful relationship, and key factors in the final choice.

"It's not going to work if the leader on the provider side and myself and the team don't get on," said Varney.

As Varney gets to know the team leaders from the surviving bidders, he will be looking for someone with a passion for delivery of service and for what the BBC is doing. And he will expect "an understanding of what it is like to work inside a huge, creative organization," Varney said. "There can't be any mismatch."

– Patrick Thibodeau

Upgrade Policies



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HP	19.1%	43.3%	27.3%	10.3%
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Sun	15.5%	43.6%	29.7%	11.2%
Oracle	11.5%	42%	29.1%	17.3%
EMC	10.3%	41.7%	31.2%	16.7%
Microsoft	13.6%	31.2%	30.2%	25.1%
CA	10.9%	34.7%	30.3%	24.1%
SAP	7%	38.4%	34.5%	20.1%
PeopleSoft	6.2%	36.7%	35%	22.1%

AT DEADLINE

Oracle Links DBs To Visual Studio

Oracle Corp. announced plans to join Microsoft Corp.'s Visual Studio Industry Partner program and tightly integrate its databases with Visual Studio .Net 2003. Oracle sells its own development tools but said the increased ties to Visual Studio should make it easier for Windows developers to write code for Oracle databases. The integration code is due to be available for download from Oracle's Web site later this year.

IBM Asks Judge to Drop SCO Claims

IBM asked a federal judge to throw out copyright infringement claims made by The SCO Group Inc. as part of its Linux-related lawsuit against IBM. In a court filing, IBM said SCO has been unable to provide any evidence of infringement thus far. An SCO spokesman said the Lindon, Utah-based vendor is still examining software code and documents turned over by IBM and expects to be able to prove its claims.

Symantec Agrees To Buy Brightmail

Symantec Corp. said it plans to buy Brightmail Inc., an antispam software vendor in San Francisco, for about $370 million in cash. Cupertino, Calif.-based Symantec already owns an 11% stake in Brightmail, which bundles Symantec's antivirus software with its tools for blocking spam e-mail messages. The deal is expected to be completed in early July.

IBM Extends Deal On Virtualization

IBM has extended through 2007 a contract under which it resells server virtualization software developed by VMware Inc. in Palo Alto, Calif. The 2-year-old deal with VMware, which is now owned by IBM storage rival EMC Corp., was due to expire this year.

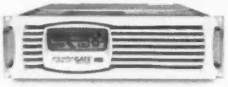
ON THE MARK

HOT TECHNOLOGY TRENDS, NEW PRODUCT NEWS AND INDUSTRY GOSSIP BY MARK HALL

MATTHEW FAULKNER

Trip Up Spammers Via Today's SMTP . . .

. . . standard using Mirapoint Inc.'s MailHurdle option, available this week. It's in the Sunnyvale, Calif.-based company's release of Message Operating System 3.5, which runs on its RazorGate appliances. Tim Chiu, manager of security products at Mirapoint, claims that alternative methods to fight spam with the Simple Mail Transfer Protocol (SMTP), such as Microsoft Corp.'s CallerID technology "require buy-in from everyone you receive mail from" and don't use existing standards, demanding instead that you bolt on additional protocol processes. Not very likely. But MailHurdle detects suspect messages outside your network and applies SMTP's current resend technique, which spammers ignore because of the added overhead, Chiu says. According to Mirapoint, MailHurdle achieves an 80% block rate for incoming tainted messages, including viruses, and eliminates 98% of the remaining unwanted e-mail through its analytics. Chiu suggests that "analytics are your last resort, not the first," because it means the spam and viruses are already inside your network. That said, Mirapoint has added analytic rules in the 3.5 upgrade to, among other things, fight the increase in phishing attacks. The MailHurdle option costs just over $3 per 1,000 users.



MIRAPOINT'S RAZORGATE 300

Nokia readies high-end fast, diskless . . .

. . . firewall and its little brother to extend its line of security products next week. Nokia Corp.'s IP 2250 can handle more than 47,000 connections per second over virtual private networks from its partner Check Point Software Technologies Ltd. in Redwood City, Calif. The IP 2250 eschews disk drives for Compact Flash to handle log data. But Dan Reis, platform manager at Nokia's Enterprise Solutions group in Mountain View, Calif., says most companies use external servers to track firewall-processing data. He adds that mean time between failures is extended without the mechanical drives. Nokia on June 1 is also shipping its IP 1220 firewall, designed for midsize firewall needs, which can handle 20,000 connections per second.

NOKIA'S IP 2250

Compliance demands more . . .

. . . than security hardware to keep you out of hot water, especially for your offshore operations, warns Pam Gupta, president of OutSecure Inc., a Bridgeport, Conn.-based security consultancy with offices in Delhi, India. She says you need to have an overall best-practices security policy, ideally one based on either the International Standards Organization 1799 or the British Standard 7799 security standards. A standards-based policy will help you square off with auditors concerned with the Health Insurance Portability and Accountability Act, the Gramm-Leach-Bliley Act, the Sarbanes-Oxley Act and other regulations that demand tough security and privacy processes. Alas, she says, few companies in the U.S. have such a standards-based policy and probably even fewer know whether those standards are applied at their offshore outsourcers. Stan Lepeak, an analyst at Stamford, Conn.-based Meta Group Inc., adds that CIOs and chief financial officers generally don't have a clue about the internal controls of their outsourcers, whether they are in the U.S. or overseas. And, he says, "Indian firms don't have a story" when it comes to compliance. For example, Lepeak says companies that have set up order-taking call centers in India may find themselves in trouble with Sarbanes-Oxley auditors if those auditors ever settle on specific rules and processes for companies to follow. That's why he's amused at the results of a Meta survey that found 20% of more than 200 corporate managers believe that their companies are already certified for compliance with Sarbanes-Oxley, which is impossible without those auditing rules in place. More frightening is another survey finding: 41% believe they'll bomb their Sarbanes-Oxley test.

PAM GUPTA

Offshore compliance may be troubling . . .

. . . but outsourced product development need not be a chore at all. Or so goes the thinking behind the online product life-cycle management (PLM) service from Arena Solutions Inc. in Menlo Park, Calif. According to CEO Michael Topolovac, companies that build widgets and gizmos overseas encounter expensive problems from engineering change orders that get overlooked or misinterpreted by overseas manufacturers. Such problems are less likely with Arena's Web-based PLM offering, he claims. Now on Version 6.3, the service-based software is scheduled for its next release by early summer and will add more granular controls over who can see what data and when. Topolovac also boasts that his service is "10 times more efficient" than his client/server competitors. **47030**

MICHAEL TOPOLOVAC

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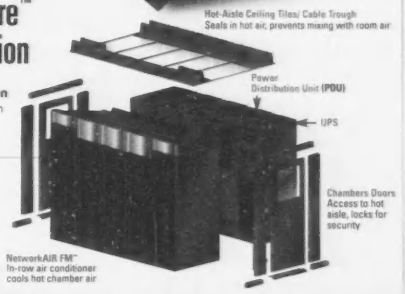

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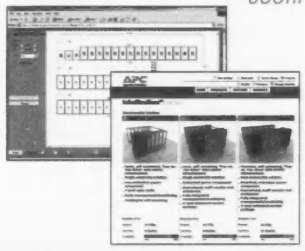

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VENDOR DON'TS

Users say their vendors must avoid:

- Being inflexible about licensing terms.
- Providing poor product presentations.
- Failing to respond to questions in a timely manner.
- Failing to understand a customer's business, direction or vision.
- Taking a longtime customer's business for granted. Users want to see hunger.
- Sharing only cherry-picked customer references.
- Appearing to be interested only in the sale.
- Deviating from the product road map.

Continued from page 7

router vendors was made last fall.

In some cases, vendors are taking steps to build the relationship by simplifying licensing terms. Sun Microsystems Inc. and PeopleSoft Inc., for instance, offer pricing options based on the number of employees a company has.

A PeopleSoft deal negotiated by Casey McMullen, director of IT systems at Agri Beef Co. in Boise, Idaho, took the per-employee approach rather than one based on the number of licensed users or concurrent-log-ins. McMullen said he has found it to be a simple, reasonable pricing model.

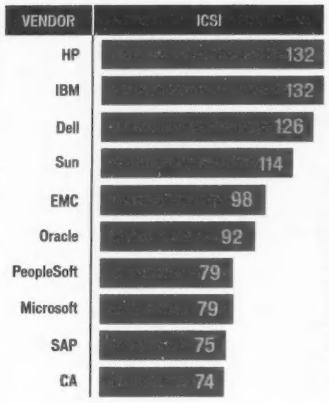
Clearly, for many users of ERP software, licensing remains a challenge. SAP AG's licensing is particularly confusing, said Ronald Moses, ERP business analyst and team leader at Arctic Cat Inc., a Thief River Falls, Minn., maker of snowmobiles. "It's almost like we have to have an onboard atlas" to navigate it, he said.

But Autumn Bayless, CIO at Tasty Baking Co. in Philadelphia, said the company's mySAP suite license is simple enough, with an unlimited use category that overcomes a lot of the typical complications.

Still, it's software contracts that appear to create the biggest headaches for users. For example, Randy Roth, a contract negotiator at Corporate Contracts LLC in Des Moines, said many software vendors fail to indemnify users against infringement of intellectual property, which is one of the problems Linux users are facing in The SCO Group Inc.'s ongoing copyright-infringement case

Customer Service

Note: The **ICSI** number is the vendor's **InterUnity Customer Satisfaction Index** score. It is based on the percentage of survey respondents who rated the vendor as "excellent," "good," "fair" or "poor" in a particular area. For a more detailed explanation of this rating system, see "Survey Methodology" on page 11.



VENDOR	EXCELLENT	GOOD	FAIR	POOR
HP	29%	45.5%	18.6%	6.8%
IBM	28.7%	46.8%	17.3%	7.3%
Dell	32.6%	38.1%	16.7%	12.5%
Sun	20.8%	47.6%	21.8%	9.8%
EMC	16.5%	43.2%	27.6%	12.7%
Oracle	13.9%	44%	27.1%	15%
PeopleSoft	9.1%	43.6%	29.1%	18.2%
Microsoft	16.1%	34.2%	27.4%	22.3%
SAP	8.8%	41.3%	30.9%	18.9%
CA	12.9%	36.7%	26.5%	23.9%

PERCENTAGES MIGHT NOT ADD TO 100% DUE TO ROUNDING

SOURCE: SURVEY OF 1,188 IT AND BUSINESS EXECUTIVES

Users Rate Microsoft Last in Licensing Policies

SCORES OF USERS cried foul when Microsoft Corp. introduced a new licensing program three years ago, and many are still sorting out the best way to deal with it.

Respondents to the *Computerworld*/InterUnity Group customer satisfaction survey rated Microsoft last among 10 leading technology vendors in the area of licensing policies.

That's hardly an encouraging sign for Microsoft as it enters an important stretch with its volume-licensing customers. Contracts are coming up for renewal, and many users are casting a more discriminating eye at the Licensing 6.0 maintenance program that caused a commotion when Microsoft announced it.

Wyndham International Inc. bought into the new Software Assurance program to upgrade its servers from Windows NT to Windows Server 2003. Mark Hedley, Wyndham's chief technology officer, said the company saw a benefit, since SA licenses cost less than full licenses. But Irving, Texas-based Wyndham won't renew its SA deal.

"Since it's very difficult to project IT initiatives into the next four years," said Hedley, "it's not clear whether or not SA is worth the extra cost."

Wyndham's SA contract runs until 2005, but many users bridged the gap to the new program by signing up for Licensing 5.0's two-year Upgrade Advantage option. Like the SA program, Upgrade Advantage entitles customers to upgrades of covered products released during the contract term.

Sunny Charlebois, a product manager for Microsoft licensing, acknowledged that the company isn't expecting many Upgrade Advantage customers – whose contracts all expire by July 31 – to move to Licensing 6.0's SA program.

"We, of course, hope they do renew, but based on our business analysis, Software Assurance may not make the most sense for their businesses," she said. "They're typically customers that want to acquire a perpetual license and use it as long as possible and possibly purchase additional services."

Under Microsoft's old program, customers chose when they wanted to pay for a discounted upgrade. Now, the typically three-year SA contracts require them to annually pay 29% of the license cost for desktop software and 25% for server software. That is a particularly bitter pill to swallow for those who find the percentages out of line compared with those of their other vendors.

Microsoft has been beefing up SA, most notably adding training, support and Office home-use rights in September. "We've got more work to do, and we are moving in the right direction in terms of making some contract changes and improving the value of Software Assurance," said Charlebois.

JEFF HORN

Northrop Grumman's SHELMAN says an all-Microsoft environment has left him feeling at times like a "hostage."

Yet IT managers interviewed by *Computerworld* said that they expect an upgrade as part of an SA contract and weigh their SA decisions based on their needs for new products.

Cleveland-based KeyCorp got its money's worth by purchasing SA on Microsoft Office 2003 for its more than 18,500 users, according to Mark Chiacchiari, vice president of desktop systems engineering. But with no plans to upgrade for at least three years, the company won't renew its SA contract, he noted.

"Long term, it will be more cost-effective to acquire the licenses for the next version of Office instead of maintaining SA," Chiacchiari said.

The new SA support options are no enticement. Chiacchiari said KeyCorp's Premier Support is "the optimal method" with Microsoft providing a technical account manager and higher-quality resources.

A technology director at a large manufacturing firm estimated that his company saved $85,000 on incident calls and $45,000 on training using SA enhancements. But he said it wasn't enough to compensate for the costs. He suggested that Microsoft extend SA to five years and reduce the annual fee to 20%, a tradeoff that might be reasonable for consistency.

With his company's server agreements up for renewal next month, the director, who asked not to be named, said he worries about the impact that canceling an SA agreement might have on his relationship with Microsoft. "Any company is going to provide a different level of service to a customer who buys a

[QuickLink a3260]. If a vendor refuses to provide indemnification, "we're advising companies to not buy that software, because [the vendor] probably stole it from somewhere," Roth said.

And hardware vendors can't take users — even longtime users — for granted, either. Some users are finding that moving to open standards makes it easier to rip and replace their systems. If a new vendor is willing to help cover the transition costs, it just might have a deal.

John Montgomery, vice president and CTO at Embarcadero Systems Corp., an Alameda, Calif.-based provider of shipping and cargo management systems, is planning a major data center upgrade next year. HP is the incumbent vendor, and it's going up against IBM.

"We're going to pit them against each other," said Montgomery, noting that there are already telling indications of which vendor wants his business more.

> **We're going to pit them [HP and IBM] against each other.**
>
> **JOHN MONTGOMERY,** VICE PRESIDENT AND CTO, EMBARCADERO SYSTEMS CORP.

HP is "operating in a fashion that may not get them the business," he said. "I think they are thinking that we will just continue to stay with them."

IBM, meanwhile, "is being very, very aggressive," he said. IBM is flying Montgomery and several members of his team to Austin next month for a small meeting, along with some other customers, to get a "high-powered" overview of the vendor's direction, he said.

Montgomery noted that an HP resource center he recently visited didn't measure up to what IBM is offering.

Since moving to a new vendor would be difficult because of all the work and retraining involved in the change, any IBM proposal will have to be compelling and take into account transition costs. But so far, "it seems like IBM is putting more resources toward getting our business than HP [is]," he said.

Joe Heasley, CIO at Gates Corp., a Denver-based automotive parts maker, said that in negotiating with multiple vendors, it's essential that the same expectations and requirements are communicated to all of them so they start off on an equal footing.

"A lot of people have separate conversations [with vendors], and they don't set expectations with vendors to where you have a level playing field," said Heasley, who recently purchased two HP Superdome servers.

Letting the vendors know exactly what you want, he said, "lets them all put their best foot forward." **47045**

Matt Hamblen, Lucas Mearian and Marc L. Songini contributed to this story.

SURVEY METHODOLOGY

Concord, Mass.-based InterUnity Group Inc. and *Computerworld* conducted a study of customer satisfaction with the products and policies of 10 enterprise IT vendors. A total of 1,188 users responded between April 5 and 14, 2004.

DATA COLLECTION: *Computerworld* editors and InterUnity Group researchers designed the survey. IT executives gathered from *Computerworld* and InterUnity Group lists were invited to participate in the study by e-mail, and the questions were posted on a Web site.

DATA VALIDATION: To ensure the integrity of the responses, user identification information, including an e-mail address, was required. The data was further validated to prevent bias based on company size or hidden vendor responses.

ABOUT THE VENDORS: The published results include qualified responses from active users of the vendors' products and services. A minimum of 200 valid user responses were required per vendor.

The study assigned an objective and strictly quantitative score indicating how users evaluated the vendor. The **InterUnity Customer Satisfaction Index (ICSI)** is a quantitative score based on the number of customers who rank their vendor as "excellent" and "good," while adjusting for the number of customers who reported a "poor" experience. An ICSI of 100 is average.

CREDITS

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- **Designer:** Julie Quinn
- **Editor:** Don Tennant

READ THE REPORT

The *Computerworld*/InterUnity Group survey report, titled "Enterprise IT Vendors: Cost, Expectation, and Satisfaction," is available on our Web site. Access requires registration. **QuickLink a4560**

little rather than a lot," he said.

A technology portfolio manager at a financial services firm who asked not to be identified said his company timed SA perfectly to upgrade to Windows Server 2003 and Office 2003. But that positive experience didn't turn him into a believer in the SA approach. "It's costly, with no guarantees," he said.

The portfolio manager, who negotiates deals with his firm's major vendors, said a three-year contract is too unpredictable both from the standpoint of his firm's ability to install new products and of Microsoft's sometimes erratic release schedules.

Some SA customers may not get upgrades during their contracts. SQL Server 2000 users won't see a new version until 2005. Windows XP came out in October 2001; its successor, code-named Longhorn, is expected in 2006. The Longhorn server is due in 2007, four years after the last release, although an interim edition is planned for 2005.

Yet SA and Enterprise Agreements (which have SA built in) hold appeal for some companies – especially those trying to reduce the hassle of tracking licenses or establish a predictable budget. Microsoft said it expects up to 75% of EA users to renew this year.

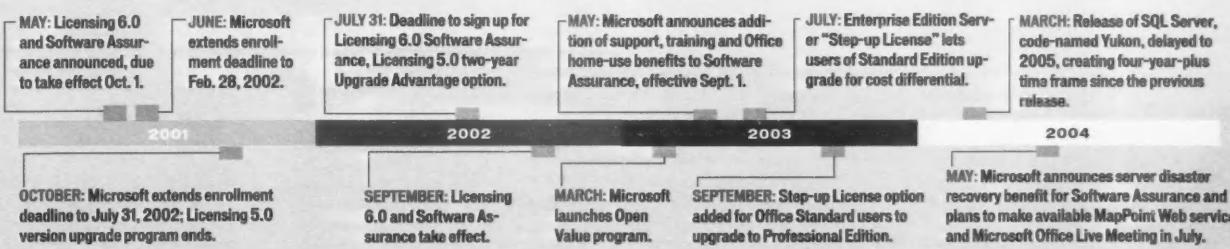
Tom Shelman, Dallas-based CIO of Northrop Grumman Corp., said acquisitions left his company with every form of agreement Microsoft has, and Northrop Grumman will opt for a new EA to ease administration and total cost of ownership. But the decision wasn't made lightly.

"Because we decided to be a very homogeneous Microsoft shop for the desktop, that makes me at times feel very much like a hostage to Microsoft from a pricing standpoint," he said. "They know I service 123,000 people and have about 90,000 clients. They know changing that would be a big deal."

Shelman said the strategic architecture group will explore alternatives. "If there is a better way to add shareholder value, I don't care what product I'm using," he said. "I am always seriously looking at other options."

– Carol Sliwa

Microsoft Licensing Policy Timeline



EMC Extends Its Storage Reach to Branch Offices

New NAS gateway and entry-level array are designed to automate data backups

BY LUCAS MEARIAN

EMC CORP. IS ROLLING out a one-two combination of low-cost storage devices targeted at corporate IT managers who want to eliminate the hassles associated with doing local backups of data from servers to tape drives in remote offices.

EMC last week announced a network-attached storage (NAS) gateway device that operates under Windows and starts at $6,100. Sources said the company plans to soon add an entry-level disk array code-named Piranha that has a base price of about $5,000 and can work with the NetWin 110 NAS Gateway.

Tom Joyce, senior director of NAS product marketing at EMC, said the vendor hopes to sell hundreds of NetWin 110s to large companies that want to consolidate direct-attached storage capacity in branch offices into disk arrays. He added that users can install the gateway device without help from EMC, which "brings us into an entirely new territory."

MORE NEWS

A federal jury rules that HP infringed on EMC patents.

QuickLink 46967
www.computerworld.com

However, the NetWin 110's price tag could escalate quickly when users add EMC's Clariion CX midrange disk arrays to handle data storage for the gateway, as well as data backup software. The Clariion line now starts at $32,000 to $122,000.

The addition of the Piranha array, which is expected to be formally called the AX100, will give users a much less expensive storage option, according to the sources. EMC officials declined to comment about the Piranha plans.

IT managers said Windows-based technology such as NetWin could help them reduce the problems surrounding tape backup of direct-attached storage in remote offices, such as the potential for mechanical and human failures.

Steve Spieler, a systems engineer at Wells' Dairy Inc. in Le Mars, Iowa, said he recently bought two of EMC's higher-end NetWin 200 NAS gateways and combined them with an entry-level Clariion CX300. Wells' Dairy, which sells dairy products under the brand name Blue Bunny, has six remote offices, plus sales representatives who work from home. Spieler said he wants to replicate data from remote locations to one of the NetWin 200s, which will mirror the information to the other NAS device in a secondary data center.

The dairy is also installing data-replication tools developed by EMC's Legato Software division in some of its branch offices. Using the Legato RepliStor software "will alleviate backing up those machines," Spieler said. If a branch-office server goes down, "that data is here, and we can use our tape library to recover it," he added.

PRODUCT DETAILS

NetWin 110 NAS Gateway

- A 1U device that runs Windows Storage Server 2003
- Supports up to 35TB of storage on EMC's Clariion disk arrays
- Includes a 30-day trial copy of RepliStor, a set of data replication and recovery tools developed by Legato Software
- Sold through distributors at a list price of $6,100, without any Clariion storage

Tony Varano, director of technology services at Kforce Inc. in Tampa, Fla., said that before the staffing recruitment firm finished installing a centralized backup architecture based on Veritas Software Corp.'s storage tools in January, only about half of its 70-plus branch offices regularly did tape backups.

"I have two guys who work on my backup team," he said. "That would be half their job, calling out there to say, 'Could you please put the tape in, Mary?' " Sometimes, backups still weren't done even after such requests, Varano added.

EMC isn't the only vendor eyeing backup products for branch offices. Hewlett-Packard Co. this week will announce plans to offer an extension to Microsoft Corp.'s Windows Storage Server 2003 software that lets Exchange e-mail servers back up data to NAS devices. EMC supports the Exchange feature in NetWin 110. 47033

Users Praise PeopleSoft's Program to Simplify Apps

BY MARC L. SONGINI
LAS VEGAS

A half-dozen PeopleSoft Inc. users last week said that the company's year-old effort to simplify its software is yielding results, making the business applications easier and less expensive to install, maintain and upgrade.

For example, IT personnel at Harris Trust and Savings Bank in Chicago expect to complete an upgrade to Version 8.8 of PeopleSoft's Enterprise financial applications in as little as eight weeks, said William Kragh, vice president of the bank's financial control group.

At its 2004 Leadership Summit here, PeopleSoft said it has built simplification features into the Enterprise Financial Management 8.8 software, plus two other application upgrades and two releases of its development, deployment and management tools. The software vendor launched the initiative at last year's conference [QuickLink 38337].

The products shipped thus far represent only a subset of PeopleSoft's technology, but the company announced that easier-to-use versions of its CRM software and the mid-market applications first developed by J.D. Edwards & Co. will be available next month.

Time Saved

According to PeopleSoft, testing of the products that have been shipped thus far showed a streamlining of various IT tasks, including a 20% reduction in overall implementation times, an 80% cut in the number of steps needed to apply application updates and a 44% reduction in the time it takes to diagnose and solve any problems.

The vendor has devoted more than 1,000 developers to the simplification program, which is dubbed Total Ownership Experience, or TOE.

Nanci Caldwell, PeopleSoft's chief marketing officer, said the vendor is halfway to its goal of reducing software ownership costs by 60% via improvements such as increased end-user productivity and enhanced maintenance and implementation capabilities. "This is not hype," she said.

NEW SOFTWARE

PeopleSoft announcements:

Enterprise CRM 8.9: Includes TOE-generated usability improvements, plus new analysis and customer portfolio management capabilities

Internal Controls Enforcer: Automates the monitoring of adherence to corporate financial controls as part of Sarbanes-Oxley Act compliance efforts

Demand-Driven Manufacturing: A set of products that supports RFID technology and activities such as procurement, demand tracking and advanced business forecasting

George Muller, CIO at Imperial Sugar Co. in Sugar Land, Texas, said a recent upgrade from the PeopleSoft 7 financial applications to Version 8.4 was the smoothest he has seen in a quarter-century of IT work. "We accomplished it under budget and on time," Muller said. "I think TOE has been a big part."

The University of Florida in Gainesville runs PeopleSoft's portal software and next month plans to roll out the 8.8 financials module and 8.4 human resources software.

Mike Conlon, the school's director of data infrastructure, said IT staffers have had to install a significant number of patches and upgrades, a process that has gotten easier due to new diagnostic tools from PeopleSoft.

Conlon said he's also interested in a tool that's designed to help IT workers identify the patches that are needed for a specific PeopleSoft release, although he said it could take until next year for all his application versions to support the change-assistant tool. 47048

Correction

In a May 10 story on health care supply chains, the name of David Yundt, chief operating officer of Hospital Logistics Inc., was misspelled. Yundt also is president of the company. The first name of Sarah Friesen, general manager of Shared Healthcare Supply Services, was also misspelled.

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BRIEFS

Gateway Cancels Outsourcing Deal

Gateway Inc. plans to terminate an IT and business process outsourcing contract that it signed last September with Affiliated Computer Services Inc. Dallas-based ACS said the seven-year, $400 million deal will be dissolved within 90 days. Recent layoffs and store closings have "dramatically reduced" Poway, Calif.-based Gateway's need for outsourcing services, ACS said.

Utility Hands Off IT, Business Units

TXU Corp., a Dallas-based utility and energy services company, said it has signed a 10-year outsourcing agreement valued at $3.5 billion with Paris-based Capgemini. The two are forming a company that will provide IT services to TXU and run business operations such as human resources and finance. TXU will own about 3% of the new company.

HP Says Revenue Rose 12% in Q2

Hewlett-Packard Co. said revenue in its second quarter increased 12% year over year. The quarter, which ended April 30, was the first in which HP's revenue topped $20 billion. But CEO Carly Fiorina said she still expects only a minimal increase in IT budgets at U.S. companies this year.

BY THE NUMBERS

	REVENUE	PROFIT
Q2 FY04	$20.1B	$884M
Q2 FY03	$18.0B	$659M

Short Takes

Three months after scrapping a plan to bundle its Commerce Server with two other products, MICROSOFT CORP. said it plans to upgrade the e-commerce software in early 2006. . . . IBM said it has signed a 10-year IT outsourcing deal valued at $454 million (U.S.) with Australian airline QANTAS AIRWAYS LTD.

IT Managers Ready Defenses Against Flaw in Wireless LANs

Users could face DoS attacks, but risks seen as low

BY BOB BREWIN

INFORMATION technology managers last week said a denial-of-service vulnerability that affects some Wi-Fi wireless LANs could force companies to develop new skills and rethink the way their networks are set up. But, they added, it should be relatively easy to defend WLANs against attacks seeking to exploit the flaw.

For example, an attacker would need to be within the typical 200- to 300-ft. range of a WLAN to shut down data transmissions, according to security researchers and wireless vendors. Corporate WLANs that are well shielded within buildings or fenced-off areas should be safe from attacks, they said.

Companies that operate multiple access points on their WLANs could also switch network traffic to other access points if one or more were attacked, although doing so would require radio frequency management skills and tools.

Defensive Measures

The denial-of-service risks were outlined on May 13 by the Australian Computer Emergency Response Team and amplified by its U.S. counterpart. The problem affects WLANs based on the 802.11b protocol, as well as the original 802.11 protocol and low-speed 802.11g wireless devices operating at rates below 20Mbit/sec., the two groups said.

They added that networks built around 802.11a or high-speed 802.11g technology aren't affected by the vulnerability, which involves an access-control function used by WLANs that support the Direct Sequence Spread Spectrum (DSSS) modulation scheme. No technology fix is available, so users must take other steps to protect their networks from attacks.

Mike Taylor, CIO at Todd Shipyards Corp. in Seattle, said he thinks geography serves as his best defense. Todd Shipyards runs its WLAN over 40 access points spread across its 44-acre shipyard, Taylor said. That means attackers would have to surround the shipyard and then try to take out every one of its widely scattered access points to stop traffic, he added.

Geography also works in FedEx Corp.'s favor, said Ken Pasley, director of wireless business development at the Memphis-based company.

FedEx runs extensive WLANs at its package-delivery hubs to connect wireless bar-code scanners used in package sorting. But the hubs are located within the fenced periphery of airports, which should make it difficult for an attacker to get within range, Pasley said.

FedEx also uses radio frequency scanning tools in an effort to detect potential attacks and protect its wireless networks, Pasley said.

The flaw was discovered by a team of graduate students at Queensland University of Technology in Brisbane, Australia. Mark Looi, a professor there, suggested that one defense against attacks would be to replace all 802.11b access points with 802.11a technology, which uses a different form of modulation than DSSS.

But a spokeswoman for United Parcel Service Inc., which operates one of the largest 802.11b networks in the world, said the Atlanta-based company views a move to 802.11a as unacceptable because of the money it has invested in its existing WLAN deployment. She added that UPS is waiting for input from its WLAN vendor, Symbol Technologies Inc., on safeguarding its network. **47049**

Wireless Threat

What could happen: An attacker could exploit the Clear-Channel Assessment function on vulnerable WLANs to block data transmissions between all nodes that are within range.

Protective measures: Switch to an 802.11 technology that isn't at risk; use physical barriers to keep attackers out of range; don't use WLANs for applications that require high data availability.

SOURCE: AUSTRALIAN COMPUTER EMERGENCY RESPONSE TEAM, BRISBANE, AUSTRALIA

MOBILE IT MATURES

To read a preview of *Computerworld*'s Mobile & Wireless World conference, visit our Web site:

QuickLink 47054
www.computerworld.com

Wal-Mart Revises '05 RFID Expectations

BY CAROL SLIWA
CHICAGO

Wal-Mart Stores Inc. executives at the Retail Systems Conference last week unveiled an updated road map for the company's rollout of radio frequency identification technology and discussed its revised expectations for suppliers working to meet a January 2005 deadline set last year.

The Bentonville, Ark.-based retailer plans to meet with its top 100 suppliers next month to share what it has learned and refine the rollout process for another 200 suppliers.

After going live with its top 100 suppliers and an additional 37 volunteers in January, the company plans to continue its expansion, with all domestic suppliers expected to participate by the end of 2006. It will also evaluate an international rollout.

Wal-Mart has challenged its top suppliers to tag all of the product cases and pallets they ship to its three distribution centers in the Dallas/Fort Worth area by January and to ensure that the tags can be read with a 100% accuracy rate [QuickLink 39181].

While the goal remains unchanged, Wal-Mart now expects that, on average, suppliers will be tagging 65% of the product cases and pallets they send to the distribution centers in January, according to Linda Dillman, executive vice president and CIO at Wal-Mart. "And it could change," she said.

Determining Feasibility

Wal-Mart spokesman Gus Whitcomb said the company provided suppliers with a set of goals and then spent months meeting with them and asking "what was actually feasible." Suppliers offered predictions of the percentage of pallets and cases they will be able to tag by January, and 65% represents the average of the figures they submitted, he said.

Dillman said Wal-Mart "never expected in reality" to reach the 100% mark but decided to set that as a goal for everyone, including its internal team. Then it directed its suppliers to "tell us what you can do," she said. "That way we know what's really possible. We don't want to be the ones limiting what those suppliers can do." **47047**

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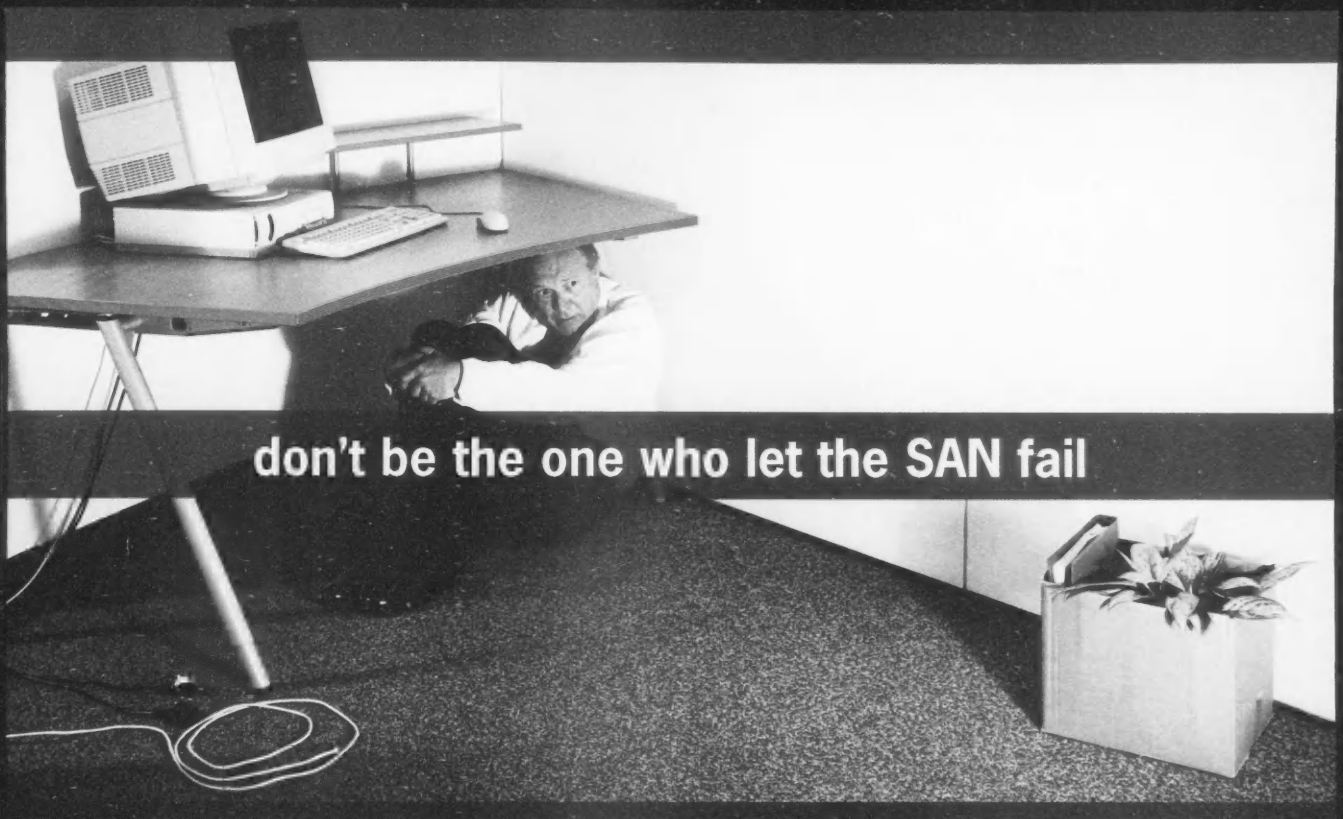

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MARYFRAN JOHNSON

Blurring Boundaries

FIRST, AN APOLOGY TO OUR READERS. We screwed up last week in the placement of an advertisement from the Harvard Business School Press promoting Nick Carr's new book, *Does IT Matter?* The ad ended up directly opposite the lead story in our management section ["Follow, Don't Lead," QuickLink 46432], which featured excerpts from that book and an interview with the intrepid Mr. Carr.

MARYFRAN JOHNSON is editor in chief of *Computerworld*. You can contact her at maryfran_johnson@computerworld.com.

That never should have happened. An editorial/advertising adjacency like that is an embarrassment and a serious concern to the editors of *Computerworld*. We have a checks-and-balances process (clearly, not a flawless one) that is supposed to ensure that a story about, say, Microsoft doesn't end up sitting next to an ad hawking Windows products. The same goes for book reviews, Q&As and any other stories that we write.

Does ad placement really matter so much? Editors think so, believing that such pairings signal to readers that the independence or objectivity of the editorial content is suspect. It raises the concern that we've struck some unholy alliance with the advertiser — even when we most definitely have not.

It may surprise you to learn that even advertisers care about adjacency. They provide our production department with a list of competitors they must be separated from, including the number of pages they want between them and certain rivals.

But I've been talking here about print publications only. The whole advertising adjacency issue changes dramatically — and much more disturbingly — in the online world. Ads are sold online by linking them to certain keywords in stories, thus enabling more accurate "targeting" of relevant editorial content by the advertisers. The technique is called contextual advertising. That same Windows story that we would whisk away to another page in order to avoid a Microsoft ad would actually be sold online with the promise of greater adjacency to a story about Windows.

This has always bothered me. We follow one set of journalistic practices in print but disregard them online, as though the change of media channel wiped away a quaint little tradition. But as the Web exploded onto the publishing scene, it was deemed a radically different media "experience." The technology enabled new advertising tactics, and editors' concerns were brushed aside by marketers with pop-up ads to sell.

But editors aren't the only ones worrying about where and how ads appear. In an adjacency issue of a different sort, L.L. Bean last week sued four companies over pop-up ads that appeared when customers browsed on its Web site. "We're trying to get advertisers to stop serving pop-up ads on L.L. Bean's Web site which annoy and divert our customers," Mary Lou Kelley, VP of e-commerce at L.L. Bean, told the Associated Press.

I wish her well with those efforts, but even more intrusive invasions are on the way. A company called Vibrant Media Inc. recently launched its IntelliTXT product for "inline" advertising, which embeds a green hypertext link inside editorial content that readers can click on to launch an ad. Vibrant calls it "smarter" advertising that offers readers an alternative to pop-ups. Editors call it an abomination that blatantly breaches the editorial/advertising boundary.

So finally, a question for our readers: What do you think of these blurring boundaries between editorial content and advertising messages? Do you care at all? Am I just tilting at windmills? I'd love to hear what you think. **47014**

PIMM FOX

The Day The Music Stores Died

CALL it the neutron-bomb effect: In less than a decade, the aisles of music retailers will be empty. I predict that online music sites such as Apple's iTunes, Napster and Sony's Connect will have drained Virgin Megastores, HMVs and Tower Records of their customers.

No, I take that back.

The big brick-and-mortar music retailers won't just be empty; they'll be gone — along with their shelves, bins and dimwitted sales assistants who can't direct you to anything other than the latest Britney Spears CD.

The success of Apple's iPod, which plays Internet-downloaded music, demonstrates how the world of traditional retailing is colliding with digital technology. With recommendation engines, shared playlists and downloadable samples all at a consumer's fingertips, why buy at a store?

PIMM FOX is a London-based journalist. Contact him at pimmfox@pacbell.net.

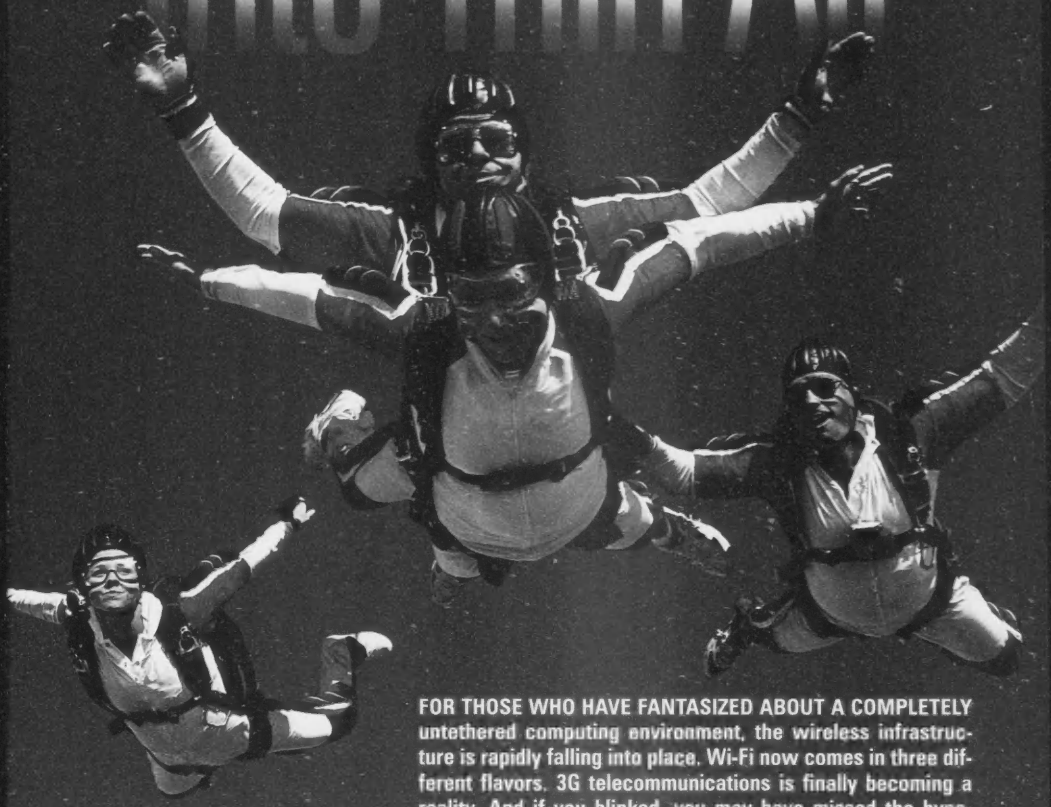
Even big music companies such as Warner, BMG and EMI are getting into the act, teaming with RealNetworks to start a service dubbed MusicNet. But this effort comes with restrictions on what you can do with the music. You might want to burn a CD so you can listen in the car, but the service's protected Real Audio and Windows Media files chain you to your desktop.

Virtual music should let you take music anywhere. And as soon as you go virtual, the economics of shrink-wrapped CDs begins to look dicey.

A consumer who pays 99 cents per song at iTunes (soon to be $1.25; the music companies are being true to form, biting the hand that feeds them) is putting about 65 cents into the pockets of the record companies. For Apple, the real money is in selling the iPod. But for the music industry, the important lesson has been Apple's demonstration that it doesn't take a music company or a traditional retailer to

ADVERTISING SUPPLEMENT

Into Thin Air



IT'S NOT YOUR FATHER'S WIRELESS WORLD!

FOR THOSE WHO HAVE FANTASIZED ABOUT A COMPLETELY untethered computing environment, the wireless infrastructure is rapidly falling into place. Wi-Fi now comes in three different flavors. 3G telecommunications is finally becoming a reality. And if you blinked, you may have missed the hype-shift to WiMax, a metro-area wireless broadband technology set to debut early next year.

It wasn't *that* long ago that mobile computing meant luggable computing. Finally, we had devices in which we could enter data or text pretty much on the fly that could also be hooked up to the static safety of an electrical outlet and telephone jack. But wireless local-area networks (WLANs), known popularly as Wi-Fi, or 802.11b, 802.11a and 802.11g, have shaken things up considerably.

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TERMS TO KNOW

3G: Third Generation mobile communications. 3G is an ITU specification for the third generation of mobile communications technology. (Analog cellular was the first generation and digital PCS the second). 3G promises increased bandwidth of up to 384Kbps when a device is stationary or moving at a pedestrian speed, 128Kbps in a car and 2Mbps in fixed applications. Fourth Generation, or 4G, wireless systems capable of data transmission rates of between 20Mbps and 100Mbps are projected for the 2006-2010 time frame.

'Mobility will revolutionize information flow'

— GARTNER VP PHILLIP REDMAN

In February, Infonetics Research, an international market research and consulting firm based in San Jose, Calif., reported that, driven by strong wireless gateway growth, global WLAN hardware revenues hit $2.5 billion in 2003, up 56 percent from 2002. In mid-2003, Gartner Inc., a research and advisory firm in Stamford, Conn., projected that 60 percent of midsize businesses in North America would deploy WLANs within their premises by the end of 2003.

"Mobility, not just wireless access, represents the next major business and technical discontinuity large enterprises are facing," says Gartner Vice President Phillip Redman. "While the PC and Internet revolutionized communications system types, mobility will revolutionize information flow. Wireless doesn't replace what you're doing on the wired side. It adds to it with greater mobility, greater functionality and by reducing time between transactions."

WLANs also enable new applications and creative uses of existing ones. One hot topic is location-based computing, which can mean everything from delivering content based on the room you walk into, to sophisticated asset-tracking capabilities by which companies can track handheld devices, for instance, or hospitals can match wheelchairs and transport personnel to patients.

Another buzz is circling around the prospect of delivering Voice over Internet Protocol telephony via Wi-Fi. That could mean dual-use phones that roam among private campus WLANs and public voice networks and systems that circumvent the public wireless voice carriers in favor of fixed wireless broadband over metropolitan-area networks.

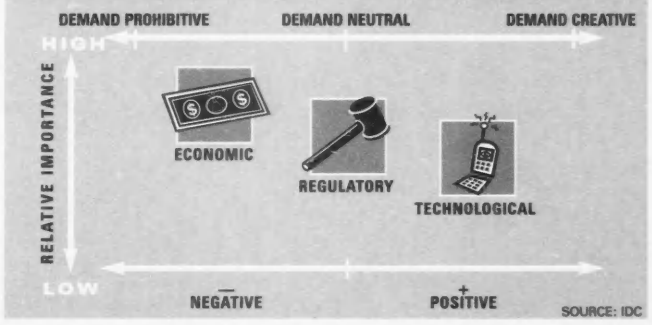
"A lot of this is still very early," Redman says. "We're in the stage of what I call becoming packet digital. We're moving away from inefficient, unreliable technology like circuit switches. The next couple of years are all about convergence of voice and data, wired and wireless." The next phase — around 2010, he says — will be "information farming, where we move away from hunting and gathering and putting together difficult solutions and get to the point where everything just works."

THE GOAL: SEAMLESS OPERATION

Visions of how everything will "just work" together are driving development of other wireless technologies.

Intel is aggressively promoting WiMax, the commercial term for IEEE 802.16 wireless metropolitan-area networking, the latest iteration of fixed wireless broadband access. With a 31-mile transmission range and data rates of up to 70Mbps,

DYNAMIC FACTORS INFLUENCING ADOPTION AND INVESTMENT DECISIONS IN WIRELESS AND MOBILE PROJECTS IN 2003

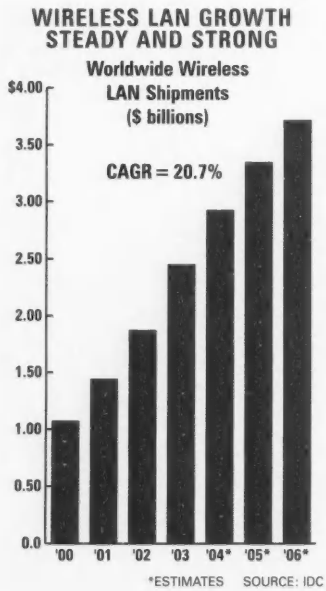


SOURCE: IDC

WIRELESS DOWN TO

WiMax is pitched as a "last mile" alternative to cable and digital subscriber line. It is seen as a practical way to implement wireless in rural areas where the low population density makes wired broadband deployment cost prohibitive. A second flavor of 802.16, designated 802.11e, provides a nomadic or mobile alternative that may lead it to become a metro-area version of Wi-Fi.

In a January presentation to a wireless industry conference, Sean Maloney, executive vice president and general manager for Intel Communications Group, described a vision of wireless technologies working seamlessly: "I'll take you on a fantasy drive from Truckee, California. And on that fantasy drive, you would be driving down the hill or you would be up in Truckee in a rural area and you'd be connected on 1xRTT [single carrier radio transmission technology] that's offering you 50Kbps or thereabouts. That is true today…. As you drive down and get within radius of San Francisco, you're going to pick up a WiMax network, which is going to give you some orders of magnitude more than that. And then you'll walk into your home [where you'll] have access to Wi-Fi initially at the [802.11g or 802.11a] kind of speed of 55Mbps, and then… following onto that in a couple of years, 802.11n…[at] 100Mbps or 200Mbps."



Verizon has its own vision of the wireless future, hinging on its January announcement that its Verizon Wireless unit will expand its BroadbandAccess network, based on the Evolution-Data Optimized (EV-DO) 3G technology, nationwide. The carrier has also embarked on an aggressive "fiber to the premises" program in which it aims to lay fiber-optic pipes by 1 million new homes by the end of this year.

"[We] think the transformation will come when we marry private Wi-Fi with public EV-DO," says Eric Bruno, vice president of product management with Verizon's Enterprise Solutions Group. "We'll have seamless connectivity, such that if I'm on private Wi-Fi in an office, when I walk out of the building, I'll transition seamlessly into Verizon EV-DO. When I walk into my house, where I have Verizon DSL, the network device seamlessly transitions again from EV-DO."

WIRELESS WAKE-UP CALL

But turning those visions into reality are still a way off. Wi-Fi is still bearing the stigma of security issues that saddled initial products and the much-maligned Wired Equivalent Privacy encryption standard. (See story, "Securing the wireless world," on page 8.)

In this interview, writer Peter Bartolik talks with Kevin Burden, program manager for International Data Corp.'s mobile devices services, about some of the main issues enterprises face in deploying mobile and wireless technologies.

Q ***Are you surprised at the way mobile and wireless technologies have proliferated in the enterprise?***

A What's more of a surprise is how long it has taken enterprises to embrace these technologies. With such low-power, high-performance devices, it makes sense for enterprises to figure out how to leverage them.

Q ***What does the enterprise market want in regard to converged mobile devices?***

A Generally, people want something that works like a PDA and looks like a phone. When you think about where the volume is going to be, clearly it's going to be in devices that look like phones because the vendors can tap into the general consumer market.

Q ***What are the roles for these types of devices in the enterprise?***

A Enterprises should be looking at mobile and wireless technologies as a way to mobilize the applications they are already running. That means middleware, servers, integration, [and] potentially changes in business rules and

GETS BUSINESS

tried-and-tested processes. Often, cultural issues need to be addressed, which are tough and can be expensive, so that's [why businesses] will start with something more widespread, like wireless e-mail and wireless expense tracking, which seem to be the two most popular applications.

Q ***How does the non-telephony PDA evolve so that it stays relevant in the coming years?***

A There is always going to be a market for the unconnected PDA. There are benefits — such as the PIM applications without a monthly wireless service charge. Despite all the functionality that vendors have been building into PDAs, like digital cameras and voice recorders, the core PIM apps seem to drive demand: the contact manager, calendar, tasks and note taking. PDAs, however, do need to evolve, so we're probably looking at the beginning of another level of convergence where the PDA moves closer to consumer electronics devices, which sell in the tens of millions of units annually. PDA vendors are exploring how they can tap into that type of volume.

Q ***What's the best way for enterprise IT managers to sort through the myriad wireless options and evaluate the solutions that best fit their needs?***

A The best way is to focus on the type of application and what mobility means to the individual user. For example, are they mobile in the field or in a corporate campus or in a building? If your users are mobile in a campus setting, you can make an initial investment in 802.11 technologies and invest further as the technology improves and evolves to WiMax and beyond. If your users are in the field, look at wide-area wireless technologies EDGE and EV-DO. The best way to navigate through these standards is to focus on the applications of the users, figure out how to give them wireless access in the places they will be working and ignore all the rest. Investing in mobility cannot be about keeping up with the technology from a device perspective or from a service perspective.

Kevin Burden, program manager for International Data Corp.'s mobile devices services

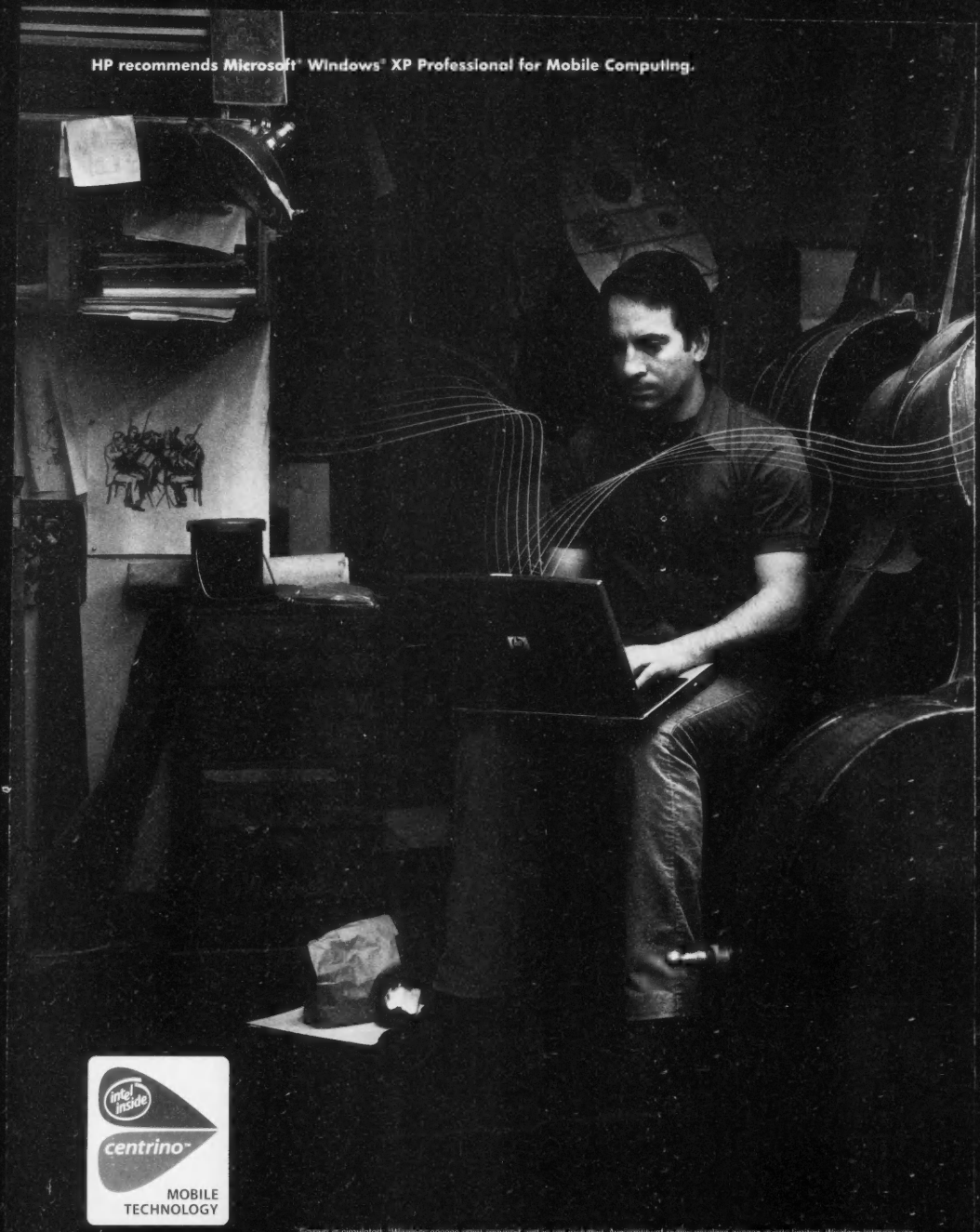
Q ***How do IT departments meet the needs of their users while ensuring these devices fit within manageable systems architecture?***

A If a company is going to mobilize its applications — if it is going to allow mobile devices to access data behind the firewall — it will need to set policies regarding what devices and platforms will be supported. From an application-development standpoint, IT may want to support only one platform, but as long as [IT develops] with industry standards, such as XML and Java, it doesn't matter what platform the client device is based on. Industry standards allow companies to be device- and platform-agnostic. Still, there are support issues, so companies are likely to build a list of preferred devices so technical problems can be reasonably predictable. Many applications a company uses are Web-enabled, so using XML, the company can essentially create a wireless extension that can be accessed by any device.

"The main reason enterprises were doing nothing a year ago was concerns about security, particularly wireless LANs," says Richard Stone, wireless and mobility solutions manager for Hewlett-Packard Co.'s Americas group. "We are seeing that changing now. People are embracing wireless LANs. They are fairly comfortable that wireless can be made as secure as the wired environment." The biggest security risk for enterprises today, Stone says, comes from employees installing "rogue WLANs" on their own without incorporating available security.

Even if enterprises are not comfortable with wireless technology, they're increasingly aware that they face substantial liability if data residing on wireless networks or devices were comprised. When new laws, including Sarbanes-Oxley and the Health Insurance Portability and Accountability Act, were enacted that covered financial disclosure and health privacy, enterprises "woke up" to the need to secure their wireless data, says Michael Disabato, vice president of Burton Group, a Midvale, Utah-based enterprise IT research and advisory firm. "Security is not just a wireless issue," he says. "It's increasingly a mobile issue. Whether you're using Ethernet in a hotel or wireless, you still have the same issues to worry about."

Tom Goodman, vice president of business development and operations with wireless and mobile security software vendor Bluefire Security Technologies of Baltimore, concurs. "The big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MOBILE TECHNOLOGY
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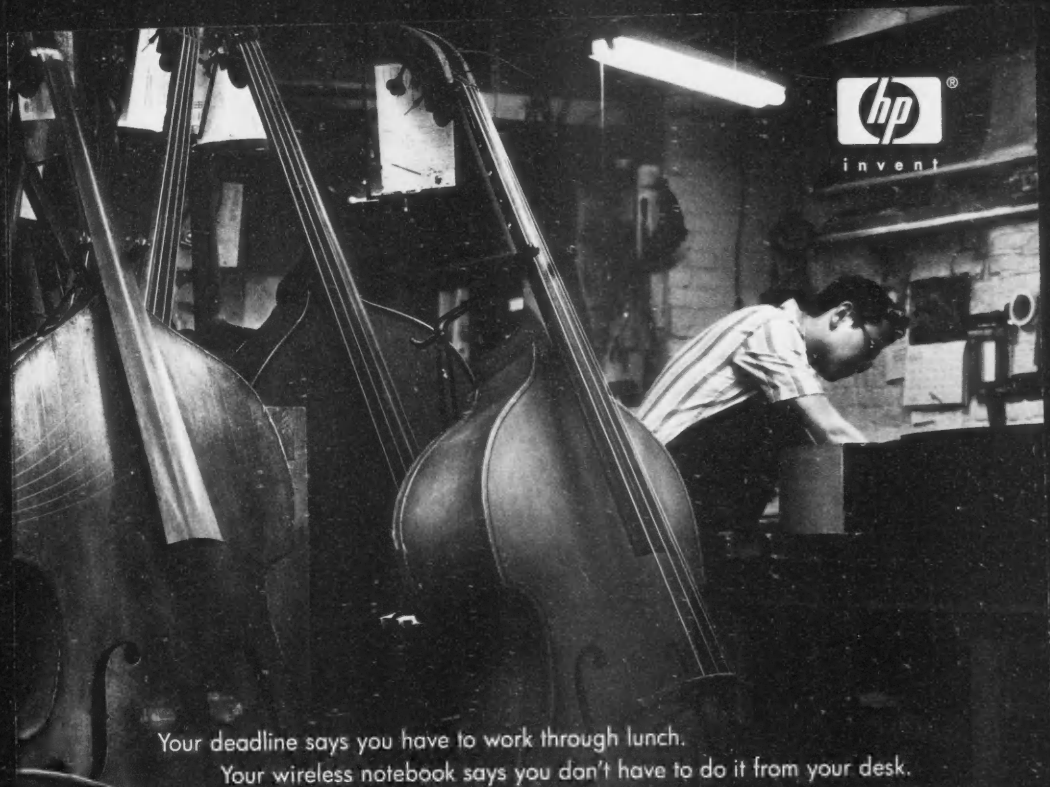

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SECURING THE WIRELESS

COMPUTER SECURITY can cometimes seem like a never-ending version of Whack-a-Mole, the arcade game where no sooner do you hammer the head of one varmint, than another pops up alongside. Although threats to mobile and wireless technology have been relatively minor compared with the unrelenting assault on Windows, the growing number of new devices on the outer perimeters of business dramatically increases the potential for harm.

Cellular phones have been viewed as fairly low-level security threats due to the wide variety of manufacturers and operating systems. But the move to standardized platforms and protocols will invariably lead to greater temptation — and opportunity — for hackers.

One serious threat to cell phones is bluesnarfing, which exploits a security flaw in Bluetooth. Recently disclosed by Adam Laurie, managing director and chief security officer of U.K.-based A.L. Digital Ltd., the exploit allows attackers to connect to some Bluetooth phones without users' knowledge and steal the data stored on the devices. Subsequent probing determined that some phones may be vulnerable even in "invisible" mode. In some public Wi-Fi hot spots, it's possible to "snarf" user names and passwords by confusing users with DNS and HTTP redirects from a competing access point.

Enterprises should be concerned about the value of the information on the devices and the potential liability if that information were disclosed, says Michael Disabato, vice president of Burton Group, a Midvale, Utah-based enterprise IT research and advisory firm, and author of a recent report, "Managing and Securing the Mobile Device."

In the U.S., companies face potential liability for violating a variety of laws, including the Sarbanes-Oxley Act, the Health Insurance Portability and Accountability Act and the Graham-Leach-Bliley Act. In Europe, companies are subjected to the restrictions of the European Union Directive on Data Protection.

"The growing mobile worker community has shredded the concept of the 'fixed' perimeter as defined by a centrally controlled firewall," Disabato says. "As more workers take to the road and bring their desks along in the form of their mobile devices, the perimeter moves with them. Essentially, the network perimeter is now in each mobile device."

LINES OF DEFENSE

An array of security products — from services that track devices to "poison pill" software that erases data when a stolen device is connected to the Internet — is being developed for mobile devices.

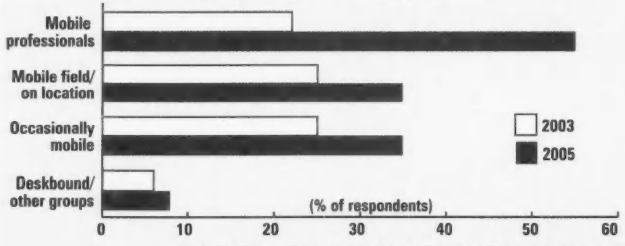
The first line of defense — encyrption — is available in a variety of products and built into common operating systems. In addition, intrusion detection is getting smarter and VPNs abound.

The IEEE 802.11i standard, expected to be approved shortly, will raise the bar for security in Wi-Fi networks. When 802.11b was approved, it incorporated the Wired Equivalent Privacy (WEP) encryption protocol, which was based on the 40-bit key encryption restriction that the U.S. government had set for exporting encryption technology. However, WEP has been widely discredited for its lack of authentication and a weak encryption key management scheme.

In 2003, the Wi-Fi Alliance responded to the criticism by introducing a strong alternative, Wi-Fi Protected Access (WPA). WPA, a partial implementation of the in-progress 802.11i standard, utilizes the Temporal Key Integrity Protocol for better data encryption and key

GROUPS WITH MOBILE AND WIRELESS ACCESS TO E-MAIL, YEAR-END 2003 AND 2005

Q. Which of the following groups at your company do you expect to have a majority of workers with mobile and wireless access to e-mail by the end of 2003 and 2005?



SOURCE: IDC's 2003 Wireless and Mobile Enterprise Survey, 604 Sites Polled

WORLD

management. WPA also includes 802.1x and the Extensible Authentication Protocol (EAP), which, via a central authentication server (such as RADIUS) authenticates users on the network before they join it. WPA also employs mutual authentication so users don't accidentally join a rogue network. More than 40 manufacturers have turned out over 175 products equipped with WPA security.

The 802.11i standard incorporates even stronger security, including protocols based upon the Advanced Encryption Standard (AES).

While much WEP-based 802.11b equipment could be upgraded to WPA, that may not be the case with 802.11i. Nonetheless, "AES is the standard now and everybody is going to use it," Disabato says. "Older [802.11.b] units are two to three years old so they are almost amortized." Disabato also points out that 802.11e, an IEEE standard that provides classes of service with managed levels of quality of service for data, voice and video applications, will also not work well with older systems so there is good incentive to upgrade. Some vendors are already shipping "802.11i-ready" systems with AES-compatible processors, so that once the final specification is approved, they can be upgraded via a driver.

PROACTIVE APPROACH

After reviewing available security technologies, Hewlett-Packard Co. standardized on a comprehensive security software management platform from Addison, Texas-based Credant Technologies, says Richard Stone, wireless and mobility solutions manager for Hewlett-Packard's Americas group. Combining security and device management, Credant's Mobile Guardian integrates with Microsoft Active Directory to centralize policy management and administration and enforce security on smart phones, Pocket PCs, notebooks and tablets.

Credant says that while only about 10 percent of enterprises are taking a proactive approach to mobile and wireless security, smart phones should push the remaining 90 percent to take a serious look at the issue. That day is apparently not yet here. In March, Gartner Inc. reported that approximately 90 percent of mobile devices lacked the protection to ward off hackers.

thing enterprises are struggling with is how [to] deal with corporate vs. employee-owned devices," he says.

Some high-profile incidents have served to highlight the risks regarding data that resides on mobile and wireless devices. Last summer, after a former financial-services executive sold his old BlackBerry on eBay for $15.50, the buyer discovered it contained company e-mails and client information. Last winter, a laptop stolen from a Rhode Island bank's principal data-processing provider was found to contain the names, addresses and Social Security numbers of about 43,000 customers. In addition, laptops stolen from the office of a bank consultant contained the names, addresses and Social Security numbers in customers' personal line-of-credit accounts.

For these and other reasons, many analysts and vendors agree that enterprises must develop policies and procedures that govern the security of mobile devices and data. "We find that very few organizations are at the stage where they can begin to make an enterprise decision as to what they will need to secure mobile and wireless users, either short or long term," says Mary Van Zandt, director of strategic marketing with Credant Technologies, an Addison, Texas-based supplier of security and management software designed to protect mobile

Once the wireless genie is out of the bottle, the issue becomes balancing the organization's need for security against users' need for access

TERMS TO KNOW

IEEE 802.11: A family of specifications, commonly referred to as Wi-Fi, developed by the IEEE for wireless LAN technology. The original specification provided for data transmission rates of 1Mbps or 2Mbps. The 802.11b variant provides an 11Mbps transmission rate in the 2.4GHz band. The 802.11a variant uses the less-crowded 5GHz band and transmits wireless data at 54Mbps. The proposed 802.11g standard extends 802.11b in the 2.4GHz band to reach speeds of 54Mbps through the use of Orthogonal Frequency Division Multiplexing.

TERMS TO KNOW

BLUETOOTH: An open specification for seamless wireless short-range communications of data and voice between both mobile and stationary devices. For instance, Bluetooth specifies how mobile phones, computers and PDAs interconnect with each other, with computers, and with office or home phones. The first generation of Bluetooth permits data exchanges up to a rate of 1Mbps.

devices and wireless access.

E-mail is the No. 1 application on which enterprises will spend money in 2004 for mobile and wireless access, according to International Data Corp.'s (IDC) 2003 Wireless and Mobile Enterprise Survey, followed by customer relationship management and sales force automation applications.

About 70 percent of the IDC survey respondents reported that they currently provide mobile-enabled e-mail for some of their users, and almost 43 percent of survey respondents currently provide wireless e-mail to at least some users. (The percentages include e-mail accessed via the Web). That access is provided mainly to a small tier of employees, and analysts estimate that only 5 percent of the total corporate population currently has access to wireless e-mail.

Once the wireless genie is out of the bottle, the issue becomes balancing the organization's need for security against users' need for access.

"The trick is finding that fine line of controlled anarchy," says Steve Robb, vice president of Atlanta-based XcelleNet, a mobile and wireless systems and security management platform provider that is now part of Sybase's iAnywhere Solutions subsidiary. "I don't see IT having the ability to exert full control again. The best IT can hope for is to limit the range of devices and say if you pick within this range, you'll get solid support and we'll meet your service requirements. If you don't, you're on your own."

***Pete Bartolik is principal of Bartolik Communications and a former news editor of* Computerworld *and editor-in-chief of* Lotus Magazine.**

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THE WIRELESS MOBILITY,

over the past couple of years, has come down to a choice between a phone handset that did data poorly or a compact data device with awkward telephony functions. While that disparity may not change, the choices and usability within each category should vastly improve as vendors try to deliver on the promise of converged data and voice technologies.

"The enterprise will most likely look for something that is PDA-like with a three- to four-inch screen that can manipulate content," says Kevin Burden, program manager for International Data Corp.'s mobile devices services. "When it comes to the enterprise, it's pretty clear that if mobile devices are intended to be a platform to mobilize back-end applications, the device has to be more data-centric, something that can display data in a meaningful way and allow users to interact with it. The question then becomes to what extent will enterprise users use these devices as their primary mobile phone?"

In presentations early this year, Intel flaunted its vision of the future with a reference design called Carbonado (now officially named the Intel 2700G Multimedia Accelerator Reference System). Based around the company's newly announced PXA270 processor and 2700G multimedia accelerator, Carbonado features a four-inch, 64K color, 640-by-480 resolution TFT LCD touchscreen that Intel says will provide PC-like, 3-D gaming and video streaming on handhelds. Furthermore, according to remarks made by Intel President and Chief Operating Officer Paul Otellini at the 3GSM World Congress 2004 in February, Intel will integrate that video and graphics capability into discrete silicon in 2005 and into phones and the application processor itself in 2006.

MORE POWER TO YOU

Whether in the form of a smart phone or a PDA with some form of connectivity, mobile and wireless devices are without doubt becoming more versatile and powerful. And with semiconductor manufacturers intent on integrating multiple radio technologies into chips and chip sets, that trend will continue. Intel, for one, is planning to make WiMax an

ROAD AHEAD

option on its Centrino mobile technology platform in 2006 and is considering making 3G an option on that platform as well. By 2007, Intel plans to integrate WiMax into silicon.

Based on their lackluster sales, though, the future of tablet PCs is still in question. In both size and functionality, tablet PCs fit somewhere between PDAs and smaller notebooks. However, since these devices have been shipping for just over a year, it's too early to gauge their success or failure. Many analysts and vendors provided anecdotal evidence that tablet PCs are catching on in vertical industries — particularly pharmaceuticals, healthcare, manufacturing and warehousing, where interest is strong in digital forms processing.

GETTING PERSONAL

Connecting the various devices in users' hands involves wide-area networks, metro-area networks, local-area networks and personal-area networks (PANs). PANs — or wireless personal-area networks (WPANs) expand on the Bluetooth PAN concept to allow a significant number of digital devices within a range of 1 to 50 meters to communicate with each other in an ad-hoc network.

Not everyone agrees with the manner in which this topology is being positioned. "The word 'network' is misleading, because it implies it's a cheap wireless LAN," says Richard Stone, wireless and mobility solutions manager for Hewlett-Packard Co.'s Americas group. "To us, it's a cable replacement technology." Bluetooth, he notes, also got a bad rap initially because it was oversold by industry.

PRESENCE OF MIND

With a multitude of devices able to tap into personal-area, local-area and wide-area networks, enterprises are faced with the increasingly difficult challenge of keeping track of assets and their locations. What's more, they must also control what information can be used on what devices and in what location. That's where location-aware, or presence-management, services come into play.

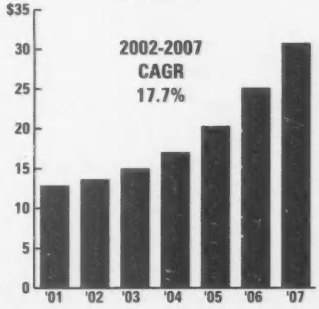
One vendor whose software makes wireless networks and mobile applications location-aware is PanGo Networks of Framingham, Mass. "[We know] every movement that a device makes into a space that we've enabled," says Rick Thomas, PanGo's vice president of marketing. "We know when that device moves in and when it moves out."

While that information gives companies the ability to track mobile and wireless devices in an enterprise, it also creates opportunities for new types of applications. For example, the University of Georgia's New Media Institute chose PanGo to enhance its outdoor WLAN throughout Athens, Ga. — marking the first outdoor deployment of intelligent, location-based WLAN systems and applications.

"The key to continued popularity of Wi-Fi and mobility technology like 3G is going to be based on presence management and identity management," says Eric Bruno, vice president of product management with Verizon's Enterprise Solutions Group. "Basically, you're keeping Wi-Fi users away from sensitive applications. Regardless of your concerns, if you can manage identity management in that fashion, you can do things like keeping patient records from ever transiting a public network."

WIRELESS FUTURES

Wireless Infrastructure and Application Services Spending ($ billions)



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rearrange the business model of selling music.

With the record companies taking two-thirds of the money, margins for stores are going to get squeezed. They are already razor thin, and promotional deals, chargebacks for unsold inventory and co-op advertising seem ridiculous when a consumer can point, click, sample and buy. This lesson wasn't wasted on Wal-Mart, which now charges 88 cents to download a song.

OK, Wal-Mart may not be a teenager's idea of cool, but its downloads are among the cheapest you can find. And it could be that the only thing that's more appealing than a cheap download is a free one. One of the hottest albums of the year is Danger Mouse's *Grey Album*, a remix of Jay-Z's *Black Album* with the Beatles' so-called *White Album*. The *Grey Album* exists in a legal limbo, since Danger Mouse was working without permissions, so you can't buy this music in stores. But until EMI pressed its legal case (it owns the rights to the *White Album*), the *Grey Album* was downloaded via the Internet more than a million times.

That's a lot of downloads. But it's nothing next to the sales that music retailers and the big labels will miss out on unless they get hip to technology. **46935**

MICHAEL GARTENBERG

The Near-Perfect Laptop

SOMETIMES a product is great because it changes things in a radical way. The original Macintosh, TiVo digital video recorders and BlackBerry e-mail devices all fall into that category. But sometimes a product enters an established category and simply does it better than anyone else. Apple's iPod is like that for music, and the IBM ThinkPad X40 redefines the laptop experience.

This ThinkPad is one of the best notebooks I have ever used. What makes it so great? It's all in the attention to details. Weighing in at a little over 2.5 lb., the ThinkPad X40 compromises on nothing. The keyboard is full-size and a dream to type on. All the keys are where they belong. The 12-in. display is Extended Graphics Array and beautiful to read. Wi-Fi (both 11b and 11g) and Bluetooth provide connectivity, and there's a real VGA port, so no dongle is required. But there's more. A high-capacity battery adds a little less than a half pound of weight and about three quarters of an inch to the length but gives me nearly seven hours of battery life. Yes, seven hours. I was able to work during an entire cross-country flight, with battery life to spare for the first time.

Then there's Access IBM, a small blue button that sends you to a control center to schedule backups, restore your system, configure roaming profiles and more. If you press it while booting, you're taken to a special Linux partition that lets you restore your system to factory conditions (or from a backup you have created) or gain access to files on a corrupted Windows partition. My favorite feature of this partition: a full version of Opera that will let you plug in an Ethernet cable and get Web access. As an experiment, I crippled Windows so it wouldn't boot and then went into this partition, where I was able to check my Web mail and copy a PowerPoint file from a backup that I had made to a USB hard disk. It all worked — flawlessly. (Now, I could argue that if Windows were better made, we wouldn't need all the protection. But it's not and we do, and this stuff from IBM just works.)

MICHAEL GARTENBERG is vice president and research director of the Personal Technology & Access and Custom Research groups at Jupiter Research in New York. Contact him at mgartenberg2@optonline.net. His weblog and RSS feed are at *http://weblogs.jupiterresearch.com/analysts/gartenberg.*

The help system is also amazing. While configuring Bluetooth, I realized that the machine ships with the anemic Windows XP Bluetooth stack. A quick look in the help file revealed IBM's clear instructions on how to disable the Microsoft stuff and put on an alternative set of drivers. Oh, and all of them were included on disk. There were even directions on how to put the Microsoft stuff back, although why you would do so is beyond me.

So, what's not perfect here? Not much. If you need an integrated optical drive, this might not be the machine for you (although there is a USB-powered DVD burner available as well as a media slice that when added still keeps the machine to under 4 lb.). It's not a tablet, so there's no pen-based computing, and it could use a FireWire port.

But those are minor quibbles. If you're tired of lugging a heavy laptop but don't want to make compromises, this is the machine to get. **46552**

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READERS' LETTERS

Examine Desktop Open-Source Costs

JULIA KING'S article on Weather.com's shift from proprietary software, "A Sunny Forecast for Open-Source" [QuickLink 46065], would have been better titled "A Sunny View on a Cloudy Future."

By this point, we are all aware of open-source's cost benefits in the Web server arena. What remains cloudy is how well open-source can garner support for turnkey application services and desktop clients. To date, this remains very much a question that continues to be disregarded by trade magazines, which instead offer glowing success stories about Web services migrations to open-source.

Server operating systems and desktop operating systems continue to fulfill different needs – a fact that even Microsoft seems to be acknowledging of late.

How can anyone equate savings in what appears to be a server-heavy environment to a more commonly found client-heavy environment? You can't without more in-depth analysis. A one-third savings in IT costs is meaningless without an understanding of what constitutes IT costs. If Weather.com does not consider desktop hardware, software and support to be IT costs, then the cost savings realized are likely to not be realized by other organizations that follow the example presented. However, if Weather.com does include the full cost of desktop support in its IT numbers and these systems outnumber servers in proportion to average businesses, then a sunny forecast is indeed at hand.

Alan Mercer
Baltimore

Confronting the Spyware Stampede

WHILE reading your May 3 article on spyware by Robert L. Mitchell ["Spyware Sneaks Into the Desktop," QuickLink 45702], I noticed a reference to PestPatrol. Wanting to find out more about that product, I did a Yahoo search. By the time I had finished, the anti-spyware program on my home computer had found five new spy programs installed!

Ray Stann
Huntington Beach, Calif.

I READ with great interest the article on spyware. (Ironically, I spent about 15 minutes removing 295 adware remnants from a co-worker's machine this morning.) I noticed that the tips list missed the biggest, easiest and fastest fix to prevent getting more spyware: Don't use Internet Explorer to surf the Web. Coworkers have told me that Mozilla Firefox/Firebird solved their adware problem completely.

Karl Kittler
Webmaster, Lancaster Newspapers Inc., Lancaster, Pa., kkittler@lnpnews.com

Compliance Step 1: Risk Assessment

DEVELOPING a framework to support a proactive risk-assessment process is a best practice any organization can follow ["Deadline Rush Delays Internal Improvements," QuickLink 46115]. It is fundamental to achieving compliance and maintaining it.

Vaune M. Carr
Architect director, Chicago Consulting Group, vmcarr@hushmail.com

Inaccurate to Call Netsky a Worm

NETSKY is not a worm ["Experts Weigh Sasser-Netsky Worm Connection," QuickLink 46656]. If anything, it is a virus/worm, with the emphasis on virus.

The key difference is that it propagates through e-mail. The only vulnerability it exploits is the Internet user who is dumb enough to execute the attachment or use Outlook when it isn't necessary.

It is important to keep the labeling straight to contain confusion. No human interaction is required for a real worm like SQL Slammer, Blaster or Sasser. These are the real nasties. Expect more of them.

Matthew Carpenter
Security/network consultant, Enterprise Information Systems, Grand Rapids, Mich., matt@eisgr.com

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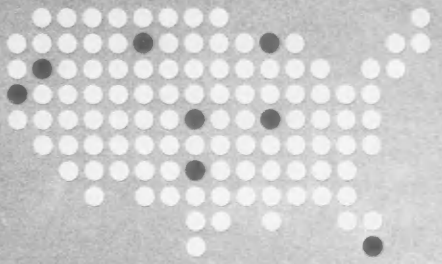

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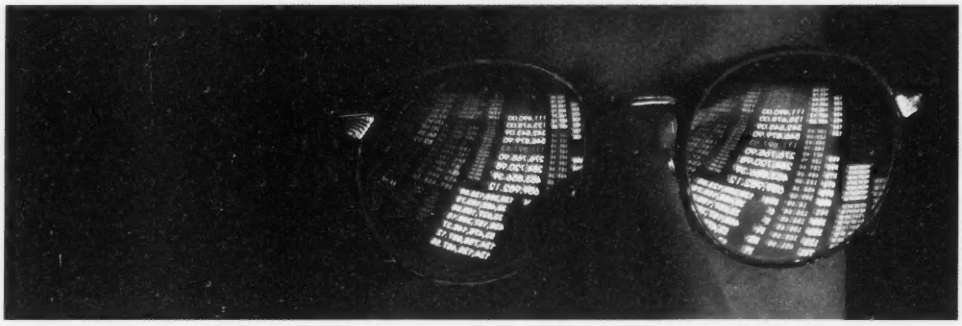
ROBUST OBJECTS AND ROBUST SQL



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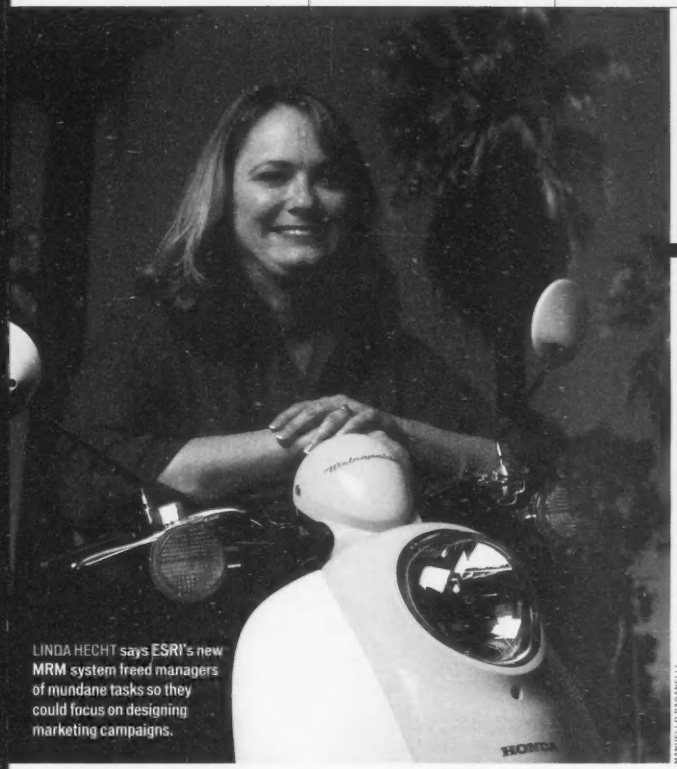
EMERGING TECHNOLOGY
Trumping Tape
Backup appliances that use massive arrays of idle disk technology could displace tape libraries for some near-line and archival data functions. **Page 28**

Q&A
Rules for Success
Pegasystems CEO Alan Trefler discusses why companies should focus on business rules and processes rather than on data structures. **Page 30**

FUTURE WATCH
IT vs. Fog of War
Can software cut through the chaos called the fog of war? Researchers are turning to video games like Tom Clancy's Rainbow Six (left) to develop tools to help military leaders and security professionals manage teams during stressful situations. But some say it won't work. **Page 32**



LINDA HECHT says ESRI's new MRM system freed managers of mundane tasks so they could focus on designing marketing campaigns.

MANUELLO PAGANELLI

Marketing GETS WITH THE Program

Marketing relationship management software can boost productivity and campaign effectiveness, but successful deployments must overcome technical and cultural hurdles. **BY DREW ROBB**

LINDA HECHT FACED a disconcerting fact: Sales success was leading to a marketing failure. "As we grew and added more people to marketing, we hit a limit on productivity," says Hecht, director of marketing at geographic information systems vendor Environmental Systems Research Institute Inc. (ESRI) in Redlands, Calif. "No matter how many more people we added to marketing, we couldn't become more productive."

Hecht has a marketing staff of 180, but with 40 products to market to 40 industries worldwide, she couldn't manage the workload. "It got to be impossible for us to do any long-term campaigns, since we had no way of managing the results," she says.

Last year, ESRI turned to marketing resource management (MRM) software to automate routine actions and improve strategic planning. "Before, we had a system that could do e-mails, but not campaigns. Now we are getting our marketing managers to start designing and building campaigns rather than just mailing something out," Hecht says.

MRM tools, provided either as extensions to CRM packages or as standalone offerings, are designed to incorporate every aspect of marketing, from initial concept through the evaluation of completed campaigns. While the number of MRM implementations is still relatively small, analysts expect strong growth in this area as companies look to extend efficiencies gained in traditional CRM strongholds, such as sales force automation.

"Marketing is one of the last bastions of full right-brain creativity, no holds barred and no accountability," says Robert Blumstein, an analyst at market research company IDC in Framingham, Mass.

"In a more budget-conscious era, MRM will let marketing stand up to scrutiny on ROI so it can gain the funds it needs," he adds. But users say that a gradual approach is best when bringing these tools into play.

A Logical Extension

MRM follows in the footsteps of enterprise tools such as ERP, CRM and sales force automation that automate and standardize business processes. Like those tools, MRM software uses a central database and establishes workflow procedures. The database contains the information on potential customers. MRM involves workflows for creating and executing marketing campaigns, including budgeting, designing promo-

tional pieces, generating mailing lists and tracking marketing responses. Programs often include analytic features that help measure the results of campaigns and frequently hook into other enterprise applications.

MRM tools work well when addressing specific marketing challenges. For instance, ESRI was struggling to convert leads into sales. Only 2% of its prospects purchased products. The company wanted a system that would guide prospects along until they were ready to buy and weed out those who weren't good prospects.

ESRI has been using software from Aprimo Inc. in Indianapolis to manage campaigns for specific products and industries, as well as to manage registration and follow up on the roughly 1,000 workshops and trade shows the company conducts or exhibits at annually. It has built questionnaires into the system for sales prospects to answer online. Depending on the responses a prospect gives, ESRI sends him sales materials or forwards his information to the CRM system as a prequalified lead. By tracking a prospect's responses through each step and taking the appropriate action, ESRI says it raised its sales conversion rate to 30% over the past year.

But to get to that point, ESRI had to clean up and consolidate the databases that the MRM system needed to interact with. Information on 1.7 million customers and prospects was originally spread among a dozen databases. ESRI consolidated it by pulling data from an SAP ERP system into its CRM system before migrating that data into Aprimo's SQL Server database.

Brand Loyalty

While Hecht needed to manage sales to enterprise customers, Dennis Upton's concern was maintaining brand loyalty among customers without cutting out retailers. Upton is CIO at Brother International Corp., a Bridgewater, N.J.-based vendor of electronics products for consumers and small businesses. Brother already used SAP AG's mySAP CRM software, so Upton decided to use that package's MRM features.

Brother collects customer data from product-registration cards and service calls and records it in databases for e-mail follow-ups. For example, a customer who purchases a printer might receive an e-mail when a new driver is available. The problem lay in coordinating those notification efforts.

"We have stringent opt-in policies and rules that customers don't receive more than one e-mail every two months," says Upton. But with customer names appearing in multiple databases, those rules were hard to enforce.

It also took longer to create marketing campaigns, since the process involved querying several databases to assemble a list. Like Hecht, Upton started by cleaning up and consolidating assorted databases into a data warehouse. And it took about five months to test and configure the software, including writing the code to pull data from other sources and populate the data warehouse.

Once that was completed, however, the time required to create a marketing campaign dropped from 80 hours to just two. "By improving the operational efficiency, we have been able to run a lot more campaigns than before," says Upton.

Hollywood Ending

United International Pictures (UIP) in London, the international distribution arm for Universal Studios, Paramount and DreamWorks, didn't bother to undertake a database cleanup and consolidation project to make way for MRM. Since its objective was to market films in 52 territories worldwide, UIP instead decided to standardize processes and workflows so employees could spend more time on marketing and less on administrative tasks.

"There is an immense flow of information from the studios and headquarters to the territories," says Robin Sturmey, UIP's marketing systems manager. "We have exceptionally short deadlines and needed a way to turn around approvals very quickly."

> **"There is an immense flow of information from the studios and headquarters to the territories. We have exceptionally short deadlines and needed a way to turn around approvals very quickly.**
>
> ROBIN STURMEY, MARKETING SYSTEMS MANAGER, UIP

A multiyear effort to achieve this is under way, with completion expected next year. UIP didn't do a database cleanup, but it did have to integrate its Aprimo MRM tool with a proprietary sales and distribution financial database called Midas. Aprimo pulls movie titles, release dates and other information from this database, and the staff uses the software's budgeting tools to plan film budgets and feed that data back into Midas. The MRM software runs on a dedicated server at headquarters that users access via a Web browser. UIP also runs local copies of Aprimo at each regional office that provide updates to the London server.

Sturmey has devoted much of his time to visiting offices to train staffers during the phased rollout. The first locations went live in April, in time to market summer films in 16 key regions. The rest will come online in the next year, he says. However, Sturmey says, "as with most things, there is some uninformed resistance, and people do tend to get kind of frustrated with any new system."

Starting Slow

Another challenge lies in how managers establish internal procedures and train employees on the use of MRM systems. Kimberly Collins, an analyst at Gartner Inc. in Stamford, Conn., warns against trying to run before you can walk. "These are complex projects with many internal and external participants, and the real key is finding out where to get started, focusing on one or more pain points and growing the MRM solution over time," she says.

MRM may meet resistance because it enforces a certain structure that may be unfamiliar to users.

Steve Rauchenecker, director of membership and marketing at the Healthcare Financial Management Association in Westchester, Ill., uses MarketingPilot MRM from MarketingPilot LLC in Evanston, Ill. Before deploying it, however, he set up dummy marketing campaigns to let his staff gain familiarity with the tools. "For a period of time, we let people run wild with those projects as well as creating their own so they could see how it worked," he says. "After that phase, we were in great shape and could start moving forward with actual work."

At ESRI, Hecht doesn't even make using MRM software mandatory. Instead, she makes the tool available and lets staffers use it of their own volition. "We don't force them to have everything go through Aprimo," she says. Once the initial setup is done and the staffers are familiar with the software, however, most users are quick to admit that it makes their jobs easier.

Rauchenecker says the end result is a more efficient operation. "Before, it took eight different spreadsheets and seven different folders to assemble the information for a campaign," he says. "Now we just need to look at MarketingPilot." **46722**

Robb is a freelance writer based in Los Angeles. You can reach him at drewrobb@sbcglobal.net.

Buying Into MRM

Vendors offer a wide variety of MRM functions in their products, but Gartner analyst Kimberly Collins says IT managers should concentrate on five areas: planning and budgeting, creation of assets, collection and management of assets, fulfillment and distribution, and measurement and reporting.

Vendors often emphasize one or more of these but typically don't have a lot of depth in all of them.

"Companies need to look at what their requirements are for those five functionality pieces, which areas are they trying to solve, and then assess the vendors against those needs," Collins advises.

While some vendors focus exclusively on MRM, others take a different approach. Vendor offerings fall into four basic categories. Here's a sampling of what's available:

BEST-OF-BREED PRODUCTS offer strengths in specific MRM niches or vertical markets. Vendors include SmartPath Inc. in Morrisville, N.C. (recently acquired by New York-based DoubleClick Inc.), Veridiem Inc. in Maynard, Mass., and MarketingPilot.

MARKETING AUTOMATION TOOL VENDORS offer products focused on automating repetitive steps in the marketing process. These include Aprimo, DoubleClick and Unica Corp. in Waltham, Mass.

MAJOR CRM SOFTWARE VENDORS that incorporate some MRM functions in their products include Oracle Corp., PeopleSoft Inc., SAP and Siebel Systems Inc.

DIGITAL ASSET MANAGEMENT TOOL VENDORS offer features for managing marketing assets. They include Artesia Technologies Inc. in Rockville, Md., EMC Corp.'s Documentum Inc. unit in Pleasanton, Calif., and FileNet Corp. in Costa Mesa, Calif.

– Drew Robb

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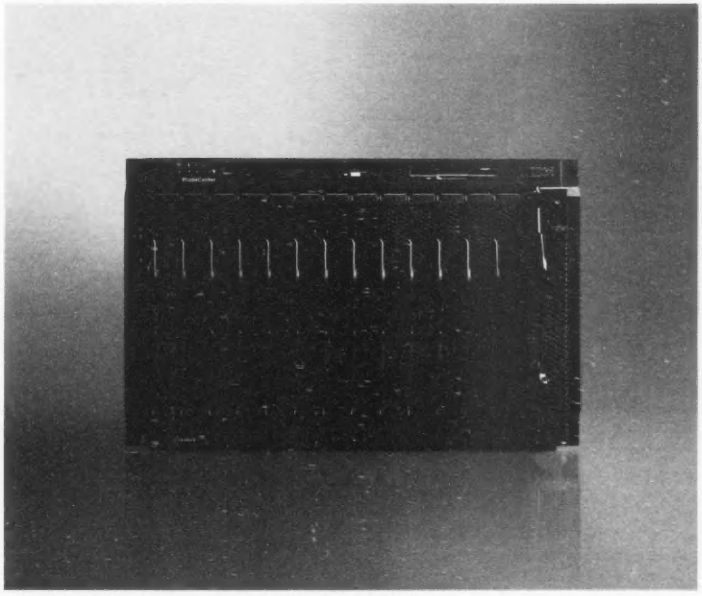

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[1]Based on FY2003 worldwide blade server revenue and shipments. IDC's Worldwide Quarterly Server Tracker, February 2004. [2]Additional charges apply. Standard support includes next-business-day response in some countries.

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OPTERON LEADS 64-bit Revolution

AMD's year-old processor is transforming the industry-standard server. By Patrick Thibodeau

IT'S HARD TO OVERESTIMATE the importance of Advanced Micro Devices Inc.'s Opteron x86, 64-bit processor. In just over a year, the three major enterprise hardware vendors have built offerings around it, and AMD's biggest competitor, Intel Corp., is producing its own version of the chip. Opteron is forcing change.

What this means for users is this: The 32-bit-only processor is about to go the way of the 16-bit chip. "By year-end, we will be selling very, very few 32-bit systems," said Paul Miller, vice president for industry-standard servers at Hewlett-Packard Co.

As users refresh or add industry-standard servers, they'll seed their data centers with 64-bit-capable x86 processors. The pricing differences between current 32-bit boxes and those running on 64-bit chips will be negligible in the near future, so the reason for buying 32-bit chips will gradually disappear, say vendors and analysts. Think of 64-bit capability as a free upgrade, ready for use when the applications arrive.

Opteron has gained a lot of attention because it allows users to run 32-bit and 64-bit x86 applications on the same chip, giving users the flexibility to gradually move to the 64-bit world. But the chip also includes architectural changes that may speed a 32-bit application's performance.

For now, early Opteron adopters like Aristotle Balogh, senior vice president of operations and infrastructure at VeriSign Inc. in Mountain View, Calif., tend to have memory-hungry custom-built applications. VeriSign already uses many RISC- and Intel-based servers to support, among other things, directory services for the .com registry. It has been testing two- and four-processor Opteron systems, putting tremendous processing loads on them in a "beat the box up until it drops" test, and the chip has performed well, Balogh says.

Balogh can get 64-bit capacity from RISC-based Unix systems. But a four-processor Opteron box with 32GB of memory will cost about $25,000, whereas a Unix box may cost more than $100,000. "With traditional Unix vendors, it is a very expensive proposition," says Balogh.

The memory gain allowed by a 64-bit chip is a big advantage, but it's not the only one. Opteron, which can run 32- and 64-bit applications, is gathering support from some 32-bit users because of how it's designed.

AMD has developed what it calls HyperTransport technology, which directly connects the CPU to the memory, eliminating the need for a bus. This reduces latency and speeds processing time, which is why Automated Trading Desk LLC, a company that provides trading technology and financial trading services, started using Opteron on Altus servers from San Francisco-based Penguin Computing Inc.

Eric Hunter, senior Linux systems administrator at the Mount Pleasant, S.C.-based company, says it runs custom-built applications that use a lot of memory, and "getting rid of the bottleneck" between the memory and CPU was the main concern. "We just saw tremendous increases in performance in our test box," he says.

Sixty-four-bit processing power is suited to programs that require large data sets that need to go above a 32-bit processor's 4GB memory limitation. Many of the applications taking advantage of this today are scientific and involve design and rendering.

For instance, the University of Utah's Center for High-Performance Computing in Salt Lake City has been recompiling its 32-bit applications to 64 bits, using a compiler developed by PathScale Inc. in Sunnyvale, Calif. This speeds up processing time by 10% to 20%, depending on the application — a significant gain for applications that run over many hours, said Martin Cuma, who is in charge of scientific application programming at the center.

But most important for the university is the increased memory addressability. Sixty-four-bit computing has enormous memory potential, calculated two to the 64th power — many terabytes. Instead of simulations that have 100 atoms, for instance, researchers can run them with 200 atoms. "All of these applications are really memory-hungry," says Cuma.

Applications Needed

For users that don't have an immediate need for those memory gains, the arrival of 64-bit applications will drive adoption, says Don McPherson, network operating systems and database administrator for a nonprofit organization that he asked not be identified.

McPherson says he can see a need for 64-bit memory because of the demands being imposed on databases. "We're pushing more data, and doing more things with databases," he says.

Analysts, vendors and users aren't certain how long it will take 64-bit computing to become mainstream. But operating systems that support x86-based 64-bit chips are arriving. There are 64-bit versions of Linux already available, and Microsoft intends to release a 64-bit version of Windows XP by the end of the year. AMD and Intel are expected to be binary-compatible with Windows 64-bit.

"We expect the transition to 64-bit software will be fairly slow," says Jon Sharp, director of platform marketing at Intel, which plans to release its own x86, 64-bit chip this summer, the EM64T. "The transition to 64-bit operating systems will happen somewhat faster," he says. "What people will care about is being able to run the two applications, 32-bit and 64-bit, side by side."

Intel views its Itanium 64-bit chip, which uses a different architecture from x86, as a challenger to the high-end RISC systems. The chip has "massively parallel resources," larger cache and more memory bandwidth, says Sharp. For instance, Itanium is well suited for use in large, multiprocessor scale-up systems, which have been Unix's domain, he says.

It's not a question of if people will go to 64 bits. "It's a question of when," says Paul Terry, chief technical officer at Cray Canada Inc., whose parent company, Cray Inc., is building a 10,000-processor Opteron system for the U.S. Department of Energy's Sandia National Laboratories. **46790**

SOME KEY x86 DATES

1978: The Intel 8086 16-bit processor arrives, the first x86 instruction set processor.

1985: Intel releases the 386, the first 32-bit microprocessor.

2001: Itanium, Intel's first 64-bit processor, debuts. It's built on a new architecture, Explicitly Parallel Instruction Computing.

April 2003: AMD releases Opteron, the first 64-bit x86-compatible chip.

February 2004: Intel says it will add 64-bit extension technology to its Xeon processor. Release is expected this summer.

Late 2004: Microsoft is expected to release a 64-bit version of XP.

AMD'S WRECKING BALL

Hector Ruiz, AMD president and CEO

What will users see from AMD over the next year in regard to Opteron? The most significant step will be to have a dual-core solution available. I think that's going to be a wrecking ball. I really do. I think that is going to dramatically change the dynamics that today has kept people from going from two-processor to four-processor [systems]. I think the migration to 90-nanometer fabrication is going to bring about some very interesting changes that will put us in a very competitive position.

Who is going to be on the receiving end of the wrecking ball? Well, that's interesting. Our plan is to take share from Intel in the Xeon space and in those places that were considered Itanium.

The complete interview with AMD's Hector Ruiz is available on our Web site:
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- Addresses challenges of data, information and application security, recovery and business continuity

TRUMPING Tape

OUTLOOK: Massive arrays of idle disks are giving a boost to disk-based backup systems, which could replace tape libraries for some applications.

BY LUCAS MEARIAN

Most disk drives in Copan's Revolution 200T backup appliance spin up only when needed, preserving media life. The compact design fits 14 drives per tray and supports up to 896 drives (224TB) in a single rack. A similar technology is used in Exavio's ExaVault product.

AT A GLANCE

Massive Arrays of Idle Disks (MAID)

WHAT IT IS: Low-cost disk-based backup and archiving appliances that power down idle disks to extend media life. Lower power requirements and less heat allow for more compact, lower-cost designs.

PROS: Faster and more reliable than tape libraries.

CONS: Cost and portability. At $3 to $5 per gigabyte, MAID still costs more than tape libraries. Disk media aren't well suited for off-site storage.

IN THE ONGOING STRUGGLE to automate and speed data backups and restores, storage administrators are increasingly turning to Advanced Technology Attachment disk subsystems. Now two vendors are pitching the idea of using specialized ATA disk backup appliances as an alternative to robotic tape autoloaders for handling large volumes of archival storage. Both are using specialized ATA disk array technology to lower the cost per gigabyte of disk-based storage and extend the life of backup disk drives, making them more attractive for archival and near-line storage.

The vendors, Longmont, Colo.-based start-up Copan Systems Inc. and Santa Clara, Calif.-based Exavio Inc., claim that this new technology, dubbed MAID, for massive arrays of idle disks, is competitive with tape and offers faster and more reliable access to data. MAID systems use arrays of ATA disk drives that power down when idle in an effort to extend media life. By spinning up only when they write or read data, the arrays use less power, mitigating heat issues and allowing drives to be packed more densely into the system. Idle disk drives require about 10 seconds to spin up, but once online, they provide faster access to archived data than tape does.

EMERGING TECHNOLOGIES

Although powering up disks as needed can extend useful life, disks that remain inactive for long periods tend to develop problems spinning up. To avoid this, MAID arrays can periodically power up all drives to relubricate the mechanics, Copan says. Drives are hot-swappable, and the systems support RAID for fault tolerance. Prices range from $3 to $5 per gigabyte, depending on the configuration, the amount of redundancy and total capacity.

Steve Curry, architect for storage operations at Yahoo Inc. in Sunnyvale, Calif., is considering buying Copan's Revolution 200T MAID array to cut the use of some 350 tape drives by half. By doing so, he hopes to improve reliability. "We see [one or two tape drive] failures every day. To us, it's not superunreliable, but it still has mechanical properties and does break down, which requires manual intervention," Curry says.

Archiving to MAID

Today Yahoo ships archival tapes to an underground storage facility run by Boston-based Iron Mountain Inc. Curry wants to locate a MAID array at the backup facility and archive to it directly using a Fibre Channel or Fibre Channel-over-IP link. "From our calculations, it's looking like it's doable. We are just waiting for someone to build a product that works as advertised," he says.

Copan's 200T, announced last month, emulates a virtual tape library. It will scale to 224TB and restore 2.4TB of data per hour — about five times faster than tape access speeds — while keeping only one in every four drives powered up and online at any one time. The basic 56TB configuration, which includes 224 7,200 rpm, 250GB Serial ATA disk drives mounted in a single rack, will ship in the third quarter and sell for $196,000, or about $3.50 per gigabyte, according to Aloke Guha, Copan's chief technology officer.

Exavio's ExaVault array is primarily marketed as a device for near-line storage and streaming of multimedia content, although the company claims that the array can also emulate a tape backup system. ExaVault, available now, uses 300GB, 5,400 rpm and parallel ATA disk drives arranged in a single rack with one controller and a Fibre Channel or Gigabit Ethernet interface. Configurations range from 3TB to 120TB. A basic unit including a controller and 3.6TB of storage is $27,700; additional modules are $6,600 per terabyte, says Kevin Hsu, Exavio's director of marketing and product management.

Despite MAID's advantages, digital tape libraries remain the cheaper form of storage, at about $1.25 to $4.50 per gigabyte, according to Fred Moore, president of Horison Information Strategies in Boulder, Colo. The low cost of tape and the fact that tape cartridges can be easily removed and stored off-site are the medium's most attractive features. In contrast, the individual disk drives that make up MAID appliances are bulkier and more fragile.

Hsu acknowledges that MAID systems cost more per gigabyte than tape libraries but argues that they are less expensive to run overall. "Terabyte for terabyte, tape is cheaper than MAID. If you look at total cost of ownership . . . you have to look at robotics, manpower, replacing the tape heads, maintenance costs. MAID is cheaper," he says.

Robert Amatruda, an analyst at IDC in Framingham, Mass., disagrees, saying that tape still provides a lower total cost of ownership overall. "You're looking at a lot less money. It's still a compelling solution," he says.

Both Exavio and Copan are developing portable versions of their systems. Copan, for example, is working on special shock-proof disk enclosures that could be transported off-site. Drives would be stored remotely in a Revolution 200T shell chassis that would spin up the drives periodically to keep them conditioned for use.

But Amatruda eyes such portability designs with skepticism. "You drop some of that stuff and there could be data integrity issues," he says. "At the end of the day, disk and tape will play a complementary role." **46527**

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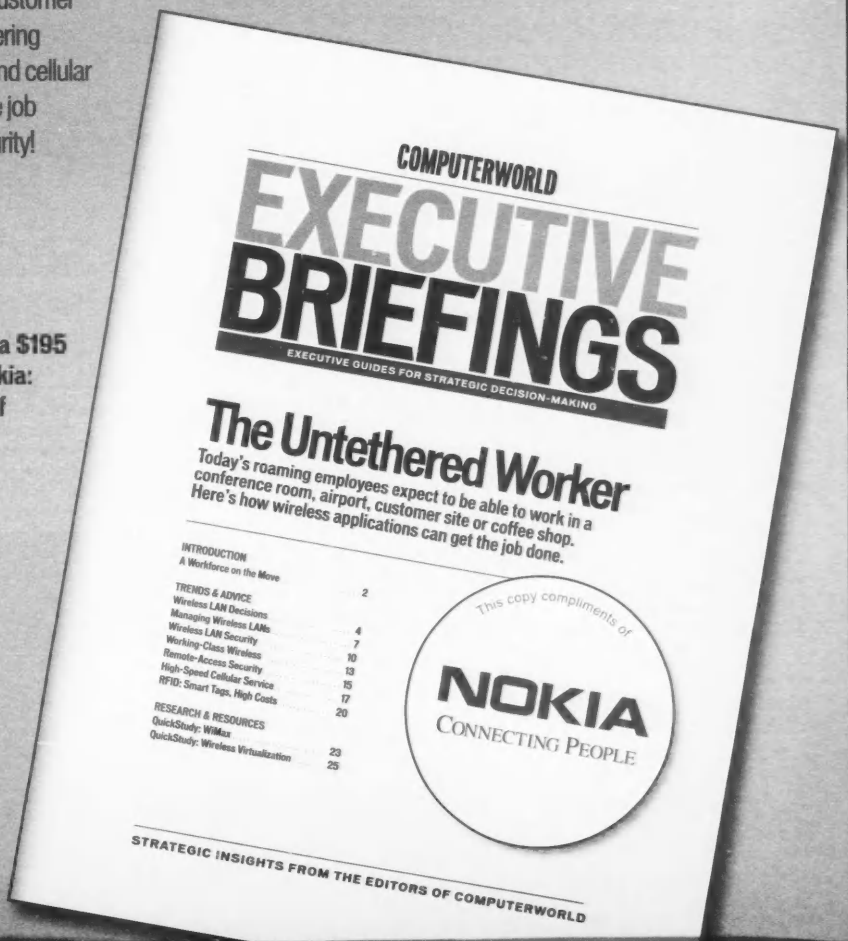

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Rules for Success

A focus on business policies and rules rather than data is what leads to smarter systems, says Pegasystems' CEO.

Q&A

In its 21-year history, Pegasystems Inc. in Cambridge, Mass., has evolved from an exception processing vendor to a major player in business process management (BPM) software, one of the liveliest corners of the strong business-intelligence market. Pegasystems founder and CEO **Alan Trefler** *says the common thread through the company's development has been a focus on business rules and processes rather than the traditional IT concentration on data and how it's organized. Trefler discussed the need to make systems smarter and more able to make or support decisions with* Computerworld's *Tommy Peterson.*

What's the path from exception processing to business process management? I'll give you some context. When I went to college and studied computers in the early '70s, I got involved with teaching computers to play chess, which at that time was considered a very hard thing to do. I became fascinated with what it would mean to teach a computer to take a complicated, human-associated activity like chess and be able to do it effectively in a way that you could not just rigorously program, that you needed to do by teaching the computer certain processes. Then, when I graduated, I went into computers and began working in the late '70s for firms that did consulting mainly in the financial services industry. I was struck by how stupid the systems were, how they were just glorified recording systems. They really were about record keeping as opposed to being about the rules and processes of doing the business.

You say you wanted to build smarter systems, but didn't the technology of the early '80s limit your options? The systems we had been building had been about recording information and presenting information; they weren't really about driving process and making decisions. So I started Pega as an expert system company in 1983, with the idea of being pragmatic about getting intelligence into systems by picking a couple of very specific problems to work on. We were limited by how fast computers were in the early and mid-'80s. We actually ran our first customers on a DEC VAX 780, which was about the size of [a conference table] and had a tenth of the power of [a laptop PC today]. It takes computer cycles to be smart. So we decided to go after exceptions, because exceptions involve smaller groups of people [and] typically involved only a percentage or two of the transactions, but were very complex and very high-value. So we went into the business of exception management because it represented an early way to do business process management and business rules without trying to boil the ocean.

How did you move beyond exception processing? As we came into the '90s, machines had gotten a lot faster, and our knowledge had gotten better, and we understood it. So what Pega did in the early '90s was to start looking for other ways beyond exceptions to go after more mainstream processes. We began to do things around fulfillment. We started getting into call centers, and we started driving beyond financial services into health care. In the '90s, we took our traditionally exception-focused processes and approach to being much more of a whole business.

Where does that leave your company in relation to BPM in 2004? We think the design we came up with for the fourth generation of applications is pretty revolutionary. It takes the notion of enterprise rules and enterprise processes and puts it into the hands of the business user. So it's not just that systems can be smarter, but the business users can have more control, and the business users can do what we call build for change. It's an approach that uses very avant-garde technology around Java and distributed systems, with the underlying premise that the only way businesses take the next step is to afford business people greater control.

Why has it taken so long for companies to focus on the business processes and business rules? The miracle of the '80s and '90s happened when companies' records became data and information. When we electronified them, we made them accessible. The whole way we think of the problem traditionally is around this electronification of data, which is incredibly important but is only half a loaf. The other half has to do with policies, which were still materially in people's heads.

In the '80s, CPUs were scarce resources. Now the number of CPU cycles that sit idle every day in a business outweigh those that are used by a factor of a thousand. That change, coupled with an enormous increase in power, makes it possible to do so much more. In order to be smart, the system has to be able to help operationalize the business process, not to just tell people what happened, but to help people actually do the work. Traditional systems make the user conform to the system. They tend to be organized around data. There's no help around trying to solve a business problem. It's organized around the data structures on the disk.

What's the approach to solving that problem? The way to break this tension is to say we're not now trying to optimize every MIPS. That's less important in a world where 98% of the computing power sits idle. We're going to let the systems themselves have information in them organized around rules that can actually do stuff for you. The only way that's going to work is to have things that are simple to use and simple to change. The model we have in mind is that IT is going to create this infrastructure for business users to do certain things on — not everything, but certain things that they care about profoundly that IT doesn't care about.

How does that model work? The breakthrough we've come up with technologically is that we've taken the rules of the business, and instead of having the rules of the business run in code, we treat the rules of the business as data. In our systems, the IT group creates the infrastructure, and we allow you to use Visio to sketch out your process, and then our engine asks you what sits behind each shape. We grab the answers, and we grab the Visio. We can run it down to the server so business users don't have to care about it. We dynamically compile it into Java as necessary, and then we run it. If the business user changes it, then we're able to reflect those changes without having the IT guys make changes because the engine is actually running off the business-oriented definition of how you want to go through things, instead of the technically oriented definition of how the data is stored. This is the problem in a nutshell that we've been working on for more than 20 years. **45696**

ALAN TREFLER

Title: Chairman and CEO

Company: Pegasystems Inc.

Age: 50

Accomplishments: World Open Chess Championship co-champion (1975). Prior to founding Pegasystems, Trefler managed an electronic funds-transfer product for TMI Systems Corp., a software and services company. He holds a patent on Pegasystems' Inherited Rule Base Architecture.

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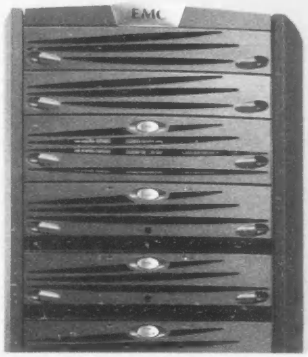

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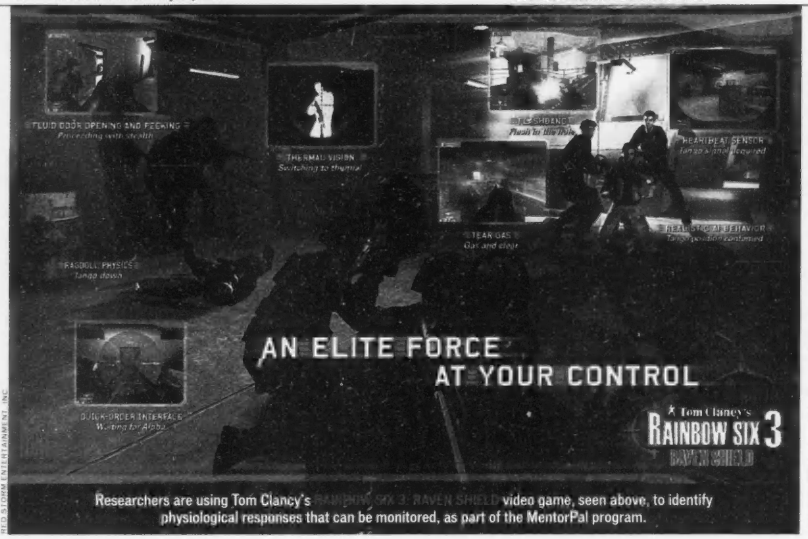

Researchers are using Tom Clancy's RAINBOW SIX 3: RAVEN SHIELD video game, seen above, to identify physiological responses that can be monitored, as part of the MentorPal program.

IT vs. FOG OF WAR

Researchers seek virtual mentors for soldiers and security professionals.

By Dan Verton

FUTURE WATCH

Blinding sandstorms, roadside bombs and resistance from heavily armed insurgents hiding among civilian populations — the war in Iraq has once again proved the wisdom of the military adage that "no plan survives contact with the enemy."

This condition is known as the "fog of war," and it's familiar to all veterans. Once the bullets start to fly, the chaos and confusion of battle force everybody, from the lowliest private to the highest-ranking general, to improvise and adapt their plans to the uncertainties of combat. It's arguably the most difficult decision-making environment in the world.

But researchers at Sandia National Laboratories' Advanced Concepts Group have been working for the past six months on a program that aims to boost the decision-making capabilities of soldiers and homeland security officials operating in high-stress environments.

The work behind the so-called MentorPal program is at such an early stage that officials are reluctant to talk about it in detail out of fear that too much will be expected of it, says Sandia spokesman Neil Singer. However, the goal of the research is clear: to make people part of the machine by leveraging biometrics and agent-based modeling software to turn human physiology into computer algorithms.

"This is many years away from developing useful technology," Singer says. "We don't know yet how to read the [human physiological] signals with a great deal of accuracy. We only know they are there."

Although the initial work is focused on national security applications, Singer says any activity where complex decision-making is the norm, such as air traffic control, could benefit from this research.

Enter Tom Clancy

The MentorPal effort began in an unusual way. Scientists observed four people as they played the PC-based video game Tom Clancy's Rainbow Six 3: Raven Shield. Through a dozen trials, researchers recorded the players' physiological responses during different situations experienced in the game's antiterrorism scenarios. Everything from voices and facial expressions to typing, mouse movements, hand motions, breathing rates, muscle activity, heart rates, skin responses and blood oxygenation levels were recorded.

So far, the research has been able to link various physiological responses to things like stress, fear, daydreaming and fatigue. Sandia scientists hope to create a central server that can integrate all of these readings from lightweight sensors worn on the body. Then they plan to use the software to help team leaders assign tasks to those who are most alert or to assist people in their decision-making based on analysis of their fellow team members' conditions.

For example, consider a team of air traffic controllers that's managing a major crisis with one or more airliners. As envisioned, MentorPal would assist the team leader by indicating that "Team Member A is growing increasingly excited" before that person reports what he is observing. That short period of advance notice may increase the team's decision-making speed enough to avert disaster.

"There are no conclusions yet on the utility of this technology," says Singer. "But if something like this can be done, then people in critical situations might be able to perform better and make better decisions."

Scientists envision the Pal as a wearable IT appliance that will collect physiological data from an array of body sensors. It will use wireless technology to transmit the data to a central analysis and integration node (the Mentor). From there, wearers of the Pal will receive feedback and coaching based on the various inputs to the system.

According to a MentorPal briefing presented to NASA on Oct. 28, 2003, by Peter Merkle, the project manager at Sandia, the Mentor system "cannot be designed" but will have to grow over time from constant interaction with a seed team. "The system will learn and change itself from experience," according to Merkle's presentation (*www.sandia.gov/ACG/mentorpal/nasahumanperformance.pdf*).

Digital Dangers

Some analysts and military experts acknowledge that while the theory behind the software is worth researching, there is a real danger that such a system could have the opposite effect from what the researchers are trying to accomplish.

"This research can have merit, [but] a potential pitfall is that it can add to the fog of war by providing contradictory or confusing information," says Lt. Col. Ross Romeo, a division chief at the U.S. Army's 1st Information Operations Command.

John Pescatore, an analyst at Stamford, Conn.-based Gartner Inc. and a former analyst at the National Security Agency, is even less optimistic. "Abstracting that human element into a neural-network-based piece of software or using biometric inputs as important feeds is one of those areas I don't think will ever happen," he says. "I will believe we are within five years of that when FAA traffic controllers fly commercial airliners from their towers, and pilots serve the coffee on the planes."

Pescatore says if he ever sees "a soldier pointing a rifle at me, and he has an earpiece with a Sandia logo on it, I will run like hell and hide behind something bulletproof."

Sandia's Singer acknowledges the potential pitfalls. However, the research is at an early enough stage that there is plenty of time to determine whether there are ways to avoid them, he says. **46627**

MORE ONLINE

A summary of Sandia's anti-terrorism activities is available at: **www.sandia.gov/ACG/focusareas.htm**

A briefing on the MentorPal program is available at: **www.sandia.gov/ACG/mentorpalmain.htm**

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7:45am to 8:15am	Registration and Networking Breakfast
8:15am to 8:45am	**Off to See the Data Wizard: Reporting from the Yellow Brick Road** Maryfran Johnson, Editor in Chief, Computerworld
8:45am to 9:15am	**Leveraging Business Intelligence in HR: Current Best Practices and Coming Innovations** Sanjiv Anand, CTO, Hewitt Associates
9:15am to 9:45am	**Business Intelligence in Action at NASD** Martin Colburn, EVP and CTO, National Association of Securities Dealers
9:45am to 10:15am	Refreshment and Networking Break
10:15am to 10:45am	**Evolving the Enterprise: Leveraging Information for Competitive Gain** Jim Davis, SVP, SAS
10:45am to 11:15am	**Industry Analyst Perspective: The IT Bottom Line: Proving the Value Delivered** Rebecca Wettemann, VP, Research, Nucleus Research
11:15am to noon	**Panel Discussion:** **Creating the Transparent Organization: New Roles for Business Intelligence with Corporate Customers, Suppliers and Government Regulators** Moderator: Julia King, National Correspondent, Computerworld Panelists: Dennis Callahan, EVP & CIO, The Guardian Life Insurance Company of America; Dave Denton, VP of Financial Planning, CVS, Inc.; Robert Dutile, EVP, Key Technology Services, KeyCorp; Ron Miller, Senior Manager, Intel Corporation
Noon	Program Concludes

Chicago • June 9, 2004

Sheraton Chicago Hotel & Towers • 301 East North Water Street

7:45am to 8:15am	Registration and Networking Breakfast
8:15am to 8:45am	**Off to See the Data Wizard: Reporting from the Yellow Brick Road** Maryfran Johnson, Editor in Chief, Computerworld
8:45am to 9:15am	**Leveraging Business Intelligence in HR: Current Best Practices and Coming Innovations** Sanjiv Anand, CTO, Hewitt Associates
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10:45am to 11:15am	**Industry Analyst Perspective: The IT Bottom Line: Proving the Value Delivered** Ian Campbell, CEO, Nucleus Research
11:15am to noon	**Panel Discussion:** **Creating the Transparent Organization: New Roles for Business Intelligence with Corporate Customers, Suppliers and Government Regulators** Moderator: Julia King, National Correspondent, Computerworld Panelists: Bill Farrow, CIO and EVP, Chicago Board of Trade; Richard Gius, SVP of IT, Medical Products and Services, Cardinal Health; Bruce J. Goodman, SVP and Chief Service and Information Officer, Humana Inc.; Scott Hicar, CIO and VP, Worldwide Information Technology, Maxtor Corporation; Shelley McIntyre, VP of Business Technology Services, The Guardian Life Insurance Company of America
Noon	Program Concludes

Selected speakers include:

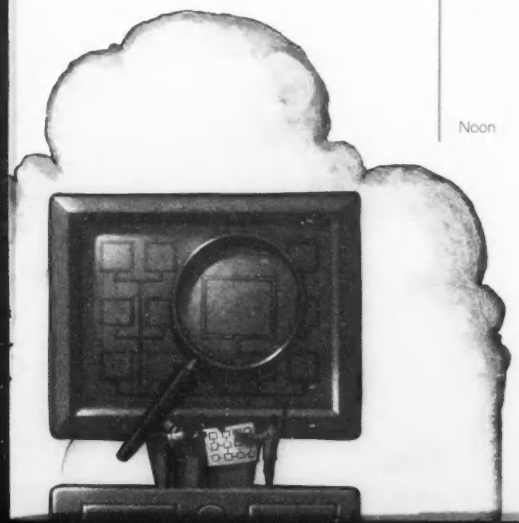
Maryfran Johnson
Editor in Chief
Computerworld

Martin Colburn
EVP and CTO
National Association of Securities Dealers

Jim Davis
SVP
SAS

William Farrow
CIO and EVP
Chicago Board of Trade

Julia King
National Correspondent
Computerworld



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Security Team Practices Theft by Delusion

A key modem disappears from a high-security area. A case of BlackBerry devices disappears in transit. These tales of apparent theft take an unexpected twist. By Vince Tuesday

"WE'VE BEEN ROBBED!" That a modem had been stolen right from under our noses seemed unlikely at first, but as the IT security team and I frantically searched for it, I declared that it could be the only possible explanation. The annual audit was only days away, and we had to double-check all of the modem phone numbers before the auditors descended upon us. We needed to document the numbers to keep them satisfied.

SECURITY MANAGER'S JOURNAL

Specifically, we were about to be audited on our perimeter network security. The audit team would be checking our firewalls, proxy servers and, most importantly, dial-up security.

The risk of an unsecured modem is still high for my company. In the past, the risk came from users wanting to bypass corporate controls and get unfettered Internet access by dialing in from home. Now most employees have broadband and no longer try to do this. On the other hand, more and more systems come with dial-up connections to allow vendors to manage them remotely. Vendors have been driven by increasingly stringent service-level agreements for performance and a desire to help customers without the expense of sending an engineer on-site. These days, it's rare for any of our large disk storage arrays or Unix systems *not* to have a trailing phone line behind the box.

We regularly call every number on our exchange and check what answers and how difficult it is to guess a working password. We hadn't done a scan in a while, and in the last few days before the audit kicked off, we wanted to run a quick test before the auditors did.

But we needed a modem, and ours wasn't to be found. The IT security department is supposed to be a high-security area, but many other staffers have access. We wondered if one of them had made off with our modem. Rather than waste time asking everyone with access to our area about this, we decided to view the closed-circuit television footage of our work area.

So my team went down to the physical security office and asked to view the tapes. There was an enormous collection, so it took about 10 minutes for each tape to be pulled from the archive and loaded. We started with tapes from a few weeks back. The modem was clearly visible, sitting neatly on top of one staff member's computer. Then we pulled a tape from a week ago. Although a few papers had collected in front of the modem, it was still clearly visible.

> **The IT security department is supposed to be a high-security area, but many other staffers have access.**

We continued to pull tapes, steadily closing in on when the crime occurred until we narrowed it down to around 3 p.m. on a Wednesday. So we loaded the final tape and settled back to catch the thief in the act.

As the tape played, we saw team members leaving the area, one at a time, to go to a meeting until the entire area was empty. It was the perfect opportunity for our criminal.

Then, at 3:17 p.m., the modem was suddenly gone, having disappeared before our eyes with no perpetrator in sight. Was this an *X-Files* thief with superhuman speed? Only after replaying the tape in slow motion did we discover the truth: I watched in horror and embarrassment as the modem rocked slightly in the air-conditioning breeze, then slid smoothly off the back of the PC and down behind the desk.

There was no thief, only a messy desk and gravity at work. Red-faced, I frantically apologized to the physical security team before rushing to the desk, where, sure enough, I found the modem hanging in the back in a mess of wires.

Also Among the Missing

The good news is that with the modem found, we completed the scan before the auditors arrived. It feels a bit cheeky to do work in the last few weeks before they arrive, as if we have something to hide. But the test results were good. Only a few modems answered outside calls, and all had the proper two-factor authentication to keep the connections safe. I found out the next week that our work had been enough to keep the auditors happy.

Other hardware also went astray this week. We sent a shipment of handheld computers to Australia from our Hong Kong office. Deliveries aren't always as fast in that part of the world, but after two weeks, I was becoming rather unhappy with the courier company. We finally tracked the problem down to a customs team, and I stayed up late to give them a call.

The agent explained that the package was delayed for quarantine. This confused me a little, and I upped the pressure on him to release the items, explaining that we urgently needed them and that time was a factor. He wouldn't budge, calmly explaining that he was keeping them in the freezer. This threw me off. I paused before politely asking why on earth he would be keeping them in the freezer. Then he explained that all soft fruit, including my "blackberries," had to be held in cold storage until all quarantine forms were completed. Had I provided the required grower information on the initial import documentation, he chastised, there wouldn't have been a delay.

It took us a few more exchanges before he understood that my BlackBerry devices were electronic and not fruit. With this mix-up resolved, our handhelds were soon defrosted and on their way to Australia. I'm still waiting to see what effect this unexpected cold snap has had on our hardware. ◗

WHAT DO YOU THINK?

This week's journal is written by a real security manager, "Vince Tuesday," whose name and employer have been disguised for obvious reasons. Contact him at vince.tuesday@hushmail.com, or join the discussion in our forum: **QuickLink a1590**

To find a complete archive of our Security Manager's Journals, go online to **computerworld.com/secjournal**

SECURITY LOG

Security Bookshelf

■ ***Hardening Windows***, **by Jonathan Hassell; Apress, 2004.**

Hardening a Windows system involves taking the out-of-the-box default state and adding patches, removing unneeded services and configuring the required services to be robust and secure. But the complicated and fast-moving nature of the Windows world has made this a difficult task to get right.

This book doesn't delve deep into the theory behind systems security or into the guts of Windows. It simply explains what to do to keep Windows systems safe and secure.

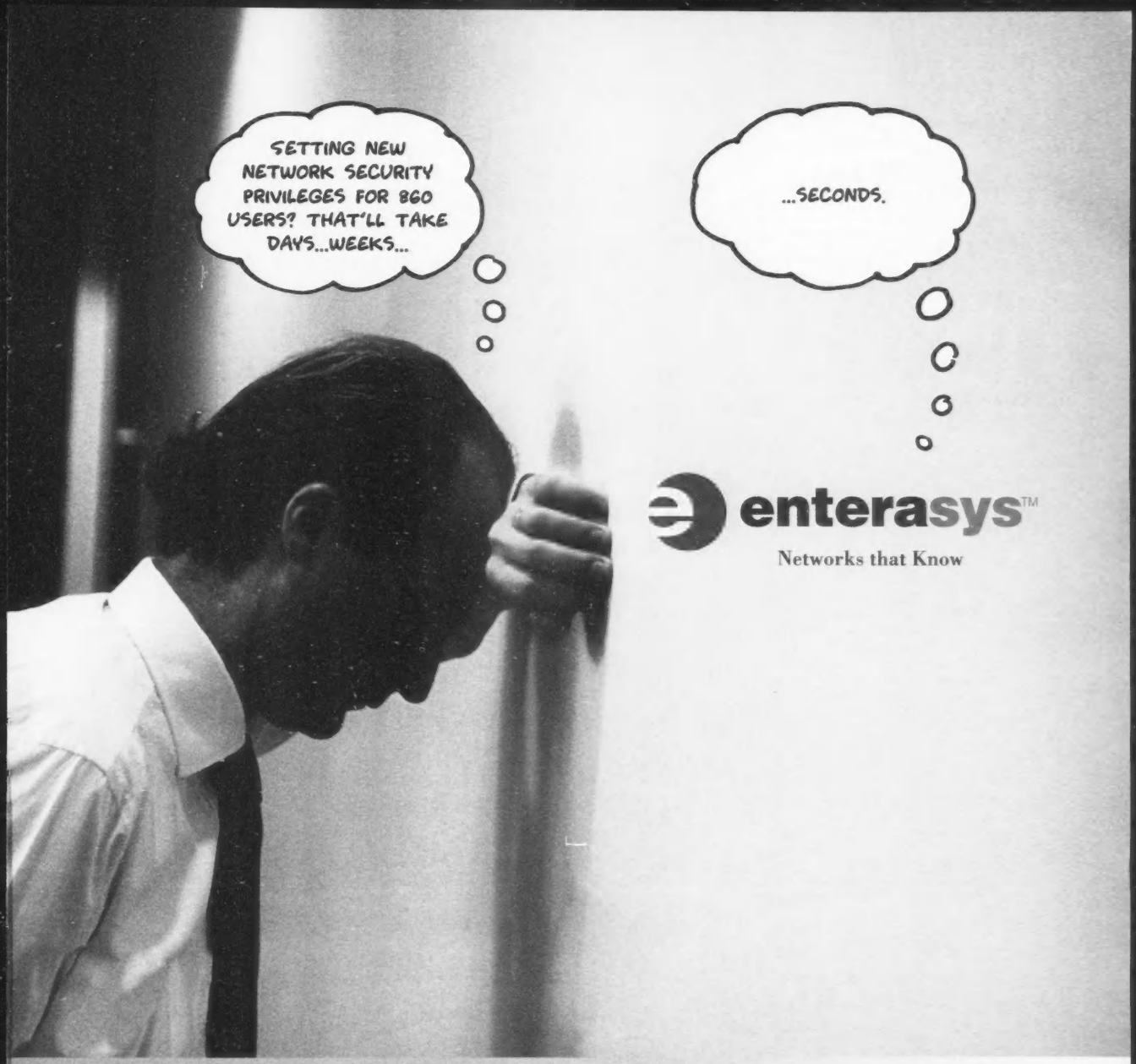
The process is presented in a clear and useful manner. The coverage of the network-access quarantine control that allows administrators to stop unpatched or out-of-date virus-protected machines from dialing in until they are properly hardened is superb. And checklists throughout turn this text into a hands-on guide.

The book should appeal to any network administrator with Windows machines to protect.

– Vince Tuesday

OmniTrust Adds Plug-in Protectors

OmniTrust Security Systems Inc., a Mountain View, Calif.-based provider of content protection services, last week introduced software designed to help companies protect confidential information. The Protected Browser HTML and Web-server plug-ins prevent users with access to confidential data from printing, copying or performing screen captures. Administrators tag the directories of specific Web pages that require protection. A client-side Internet Explorer plug-in ensures that users can't manipulate protected data while allowing input where needed. Product pricing starts at $80 per seat.



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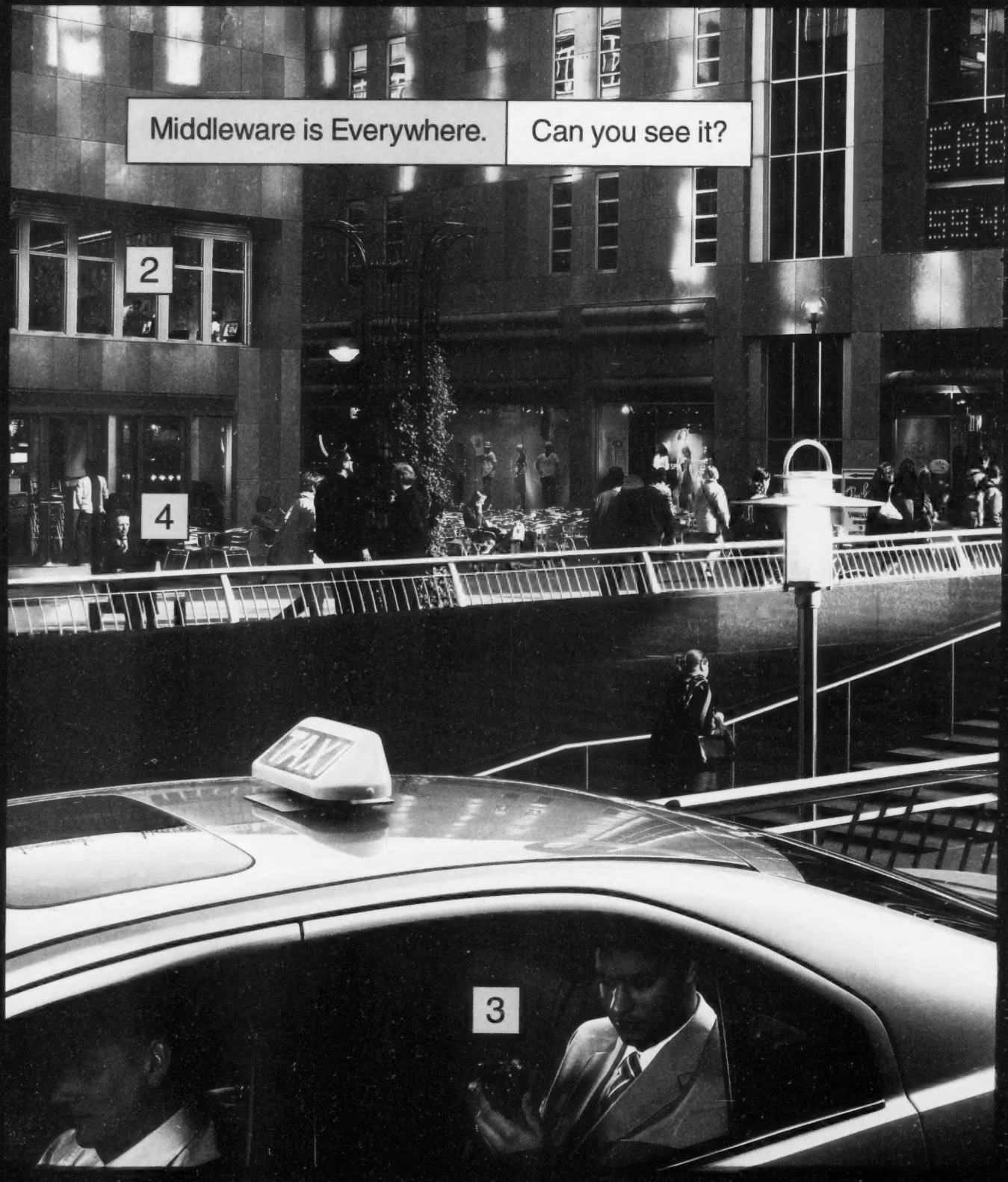
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BRIEFS

Sonic Upgrades ESB

Sonic Software Corp. in Bedford, Mass., announced Sonic ESB 5.5, the latest version of its enterprise service bus. Sonic ESB 5.5 incorporates the Sonic Continuous Availability Architecture, which guarantees that transactions are not lost or rolled back and reduces the time required for the ESB's communications infrastructure to resume operations after a failure, according to Sonic. Key capabilities include hot fail-over to ensure the integrity of in-process transactions, and an "out-of-the-box" software-based configuration, eliminating the need to configure and deploy specialized hardware, the company said. Sonic ESB 5.5 will be available by the end of the month. Pricing starts at $10,000 per communications server CPU.

Smarts Launches Business Insight

System Management Arts Inc. in White Plains, N.Y., announced Business Insight, which uses automated analysis software to provide a real-time view of the health and availability of networks, applications and systems, according to the company. Business Insight includes the InCharge suite of software products, which comprises a new version of InCharge 6.2 with new releases of InCharge Business Impact Manager, InCharge Service Assurance Manager and InCharge Server Performance Manager. Pricing starts at about $100,000.

Sony Announces Blue-Laser Drives

Sony Corp. last week announced blue-laser disc drives based on its Professional Disc for Data format that are aimed at e-mail archiving and network storage. Sony Pro-Data drives have 23GB storage capacity on a single-sided disc, and they can clock 11MB/sec. read and 9MB/sec. write speeds, according to the company. The drives retail for $2,995 for the internal SCSI model and $3,299 for external SCSI models.

TOMMY PETERSON

Re-engineering the User

MUCH HAS BEEN SAID and written about the need for software that aligns with and supports the processes and policies of the business using it. The goal is to make IT systems, and the companies that run them, more responsive to ever-changing market threats and opportunities.

TOMMY PETERSON is *Computerworld*'s Technology editor. Contact her at tommy_peterson@computerworld.com.

It's an appealing vision, in a Darwinian sort of way: a lean, agile organization, bristling with streamlined technology that delivers a competitive advantage while mocking the arcane clunkiness of old-fashioned enterprise systems.

At the end of this line of thinking is IT, which does the dirty information work. It serves up the data and analysis needed in real time — and then gets out of the way, leaving the informationally empowered user free to think strategic thoughts. The better these big corporate IT systems do their jobs, the more they recede from the attention of end users. They certainly alter the ways those users think and behave, if in largely unnoticed ways.

But some increasingly popular technologies are designed specifically to structure and alter users' thinking and behavior. These tools and systems are loosely categorized as collaboration, knowledge management, project planning and brainstorming software. Their use suggests a more humbling perspective on human/computer interaction.

The basic premise is that software can make us better by imposing order (policies and protocols) on the way we interact with it and with our colleagues, customers and partners. The software speaks to that perceived need to get organized that pervades every workplace — and maybe every life.

There's more than a hint of the didactic about these tools — it's not surprising that many of the companies that offer such software have roots in the e-learning and training industries.

When the tools work well, they can quickly move to a central role in an organization. Eurocontrol, the 33-nation alliance that controls air traffic throughout Europe, is in the process of an expanding implementation of Centra Web conferencing and e-learning software. John Byrom, head of the organization's flow management division, recently made use of the e-conferencing software mandatory for meetings among Eurocontrol members.

"We're taking a hard line on this: If they want to meet with us, they have to use the tool," says Byrom. "We tell them that we're trying to be more cost-effective — and we are — but the other factor is that the software makes our meetings more efficient and productive."

Byrom acknowledges that a trip from, say, Brussels to Athens for an hour-long meeting, as was Eurocontrol's past practice, has its appeal. But besides the time and money expended, such jaunts probably aren't the most effective way to get things done.

"Now people stay in the office and concentrate on finding a result for the meeting. There's always a real agenda, and there's nothing else to do but work, and you find a fairly quick solution," says Byrom. "That doesn't mean that you're not open to ideas, but it gets you back to a culture of results."

There's also software to guide you in those early phases of a project, when you have no idea what those results should be. Many of these tools are designed to facilitate "visual thinking" — turning brainstorming sessions into project maps and diagrams. A tool like Microsoft Visio might help you turn your ideas into graphical presentations, while software from vendors like Mindjet or Inspiration Software produce pictures to clarify ideas.

The delivery systems group at Genencor International, a biotech company in Palo Alto, Calif., looked around a couple years ago for a knowledge management tool and picked Mindjet's MindManager. The scientists in the group liked the Mind Maps — detailed but easily changed diagrams of ideas and how they're connected — that emerged from brainstorming sessions using the software, according to group leader Todd Becker.

"It was a way to capture ideas, put everything together and have it in a common repository," he says. The software has spread out through Genencor for uses ranging from preparation of papers and presentations to project management. Becker says his only reservation is that MindManager tends to organize most ideas into hierarchies, and sometimes that's not appropriate.

That's the rub for all these systems: Having a structure allows you to build ideas and get results, but it also imposes limits.

But some advocates take an expansive view of the potential of the collaborative software their organizations use. Byrom, for example, ultimately wants to build a change management system around the Centra system that covers situations ranging from training to crisis control.

"We're only using a little piece of the software's potential, and we need to use that little piece better," Byrom says. "We have to get smarter, and the technology will get smarter, and things continue to improve." 46981

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Career Watch
Animas Corp. CIO Bogdan Butoi (left) explains how he bolstered his IT staff with student workers. Plus, management tips for handling poor performers and a look at the highest-paying IT certifications. **Page 44**

OPINION
Alignment Is a Team Effort
They're not IT projects; they're business projects, says Ace Hardware CIO Paul Ingevaldson. He says IT alignment comes when the entire business shares responsibility. **Page 48**

Spreadsheet Overload?
The ubiquitous spreadsheet — which often has hidden errors — may not be good enough for heavy-duty financial planning and reporting in the Sarbanes-Oxley era. But it's likely to survive as a user-friendly presentation tool. **Page 46**

Tuning UP Tech Careers

BY JULIA KING

In an era of business-focused IT, tweaking your technology career paths can attract and retain key talent.

IF YOU'VE HEARD IT ONCE, you've heard it dozens of times in the past three cash-strapped, resource-constrained, hyper-cost-conscious years: The one and only purpose of IT is to support and enable the business. That means everybody in IT, from network administrators to data architects and project managers, must know the business better than ever before.

"You have to understand the business. It's more important than understanding technology if IT is going to be proactive," says Dennis Fishback, CIO at San Jose-based energy producer Calpine Corp.

True enough. Yet experts warn that there's also a danger of IT organizations increasing their business focus at the expense of maintaining leading-edge technology expertise. That's why the very best IT employers are simultaneously upgrading and enhancing purely technical IT positions — and their accompanying salaries and benefits — as part of a dual-track career-path system.

"The best companies, and especially those with an R&D mind-set, are searching to support the individual technical contributor and the value they bring," says Linda Pitteuger, an analyst at People[3] Inc. a Gartner Inc. company in Bridgewater, N.J. "To stymie them is ridiculous. It's Flintstone HR."

It's also increasingly risky as the economy improves and hiring picks up, especially at companies with pent-up demand for top technical talent. In a 2004 PricewaterhouseCoopers survey of 177 chief fi-

Tuning UP Tech Careers

Continued from page 39

nancial officers at U.S. companies, 63% of those in technology companies said they plan to increase their workforces by an average of 3.5% this year.

At the same time, many IT workers are restless and looking for a job change. In a survey conducted in late 2002 by Fort Lauderdale, Fla.-based Spherion Corp. and Rochester, N.Y.-based Harris Interactive Inc., 51% of 3,278 U.S. workers interviewed said they wanted to leave their current jobs. IT workers were especially dissatisfied, with 40% reporting poor or fair job satisfaction, compared with 28% of the total sample.

Here's a look at how several leading-edge IT employers across a variety of industries are fine-tuning their IT career paths to attract and retain some of the best and brightest technology- and business-focused IT talent.

Side-by-Side Career Ladders

Cardinal Health Inc. has spent the past two years overhauling its IT career-path system. Before that, says IT Director Dave Hammond, the human resources department and upper management considered it "an absolute anathema" to award incentive pay to any workers other than managers.

This approach shortchanged the many employees who have deep knowledge of particular computing platforms or software tools and can solve problems but have no desire to manage other people, he says.

"You'd never put these guys in front of customers on a sales call, but you also couldn't do without them," Hammond explains. Today, he adds, "everybody understands that."

Under the old system, those technology employees were penalized. But that all changed, Hammond says, when CIO Jody Davids won approval for the current system of parallel career tracks — and pay — for IT workers and IT managers. "The way we have structured the job paths now is that they are parallel, but there also are nexus points along the paths, so there's always a way to get back," Hammond explains. "An IT architect might go back to school and get an MBA and want to get on a project management or manager track, and we allow that. We allow free changing, as long as people have the skill set."

Cardinal's one stipulation is that workers who receive extensive, company-paid training for a specific position must commit to remain in that position for a minimum of two years.

Global Experience

Top-notch experts in a particular technology, such as Oracle databases, can be difficult to attract to a Fortune 500 company outside of the high-tech industry "because these experts like to associate with their peers," says Barry Libenson, CIO at Ingersoll-Rand Co. in Woodcliff Lake, N.J. "You have to be able to provide them a career path in which they can rise in the ranks of the technical staff."

The $8 billion industrial manufacturer does that by awarding increasingly larger and more complex technology projects to top talent and sending those employees on assignments around the world.

"Right now, one of my best guys is responsible for a $1 billion project in Dublin, Ireland, where all of our European orders flow through. He is the architect," explains Libenson. "The real tough question is, What do I do with him when he comes back to us? He'll probably take over a large-scale sector implementation."

Chetan Shah, executive vice president of technology at Synygy Inc., a software and services company in Conshohocken, Pa., dispatches his top technical employees to India and other offshore sites for two to three months at a time to set up software development centers. "We offer this as an opportunity for people who want to get experience in other cultures and work with technologies that are different," he says. "A T1 here, for example, is different than a T1 in India."

Integration Experts

IT career paths changed at Rich Products Corp. when the Buffalo, N.Y.-based frozen foods maker migrated to SAP AG's ERP software to run its entire business. IT employees with subject-matter expertise in a particular business function, such as logistics, sales or procurement, moved into so-called competency centers where they serve as knowledgeable liaisons between nontechnical users and the IT group.

"These people are functional experts who started their careers on the business side and then became involved in IT and process-change initiatives," explains CIO Paul Klein. Technology-oriented IT workers, on the other hand, are now focused on systems integration, which requires a deep knowledge of operating systems and network architecture, he says.

"Our whole [technical] focus now is managing architecture and integration and continuing to assemble a collection of packages," Klein says. "We don't design screens anymore, so we don't need things like strong relational database management skills. And when we do need that expertise, we go outside and bring in contractors."

Salary and compensation for both technology employees and those in the competency centers relates directly to their level of leadership responsibilities, Klein says. "If you're an individual performer, no matter how good you are, you're going to max out," he adds. "But as long as you have leadership responsibilities, you can get beyond that individual-performer cap."

For example, Rich Products is upgrading its 1,500 PCs across 20 manufacturing sites. "It's strictly a technology project, not a business project," Klein notes. "But the project leader is someone with a lot of technology project management experience, and that person is making as much money as project leaders who are leading business projects."

It's not whether a project is about business or technology that determines the manager's compensation, he says. "It's a matter of how much leadership you want to take on." 46513

> "The best companies, and especially those with an R&D mind-set, are searching to support the individual technical contributor and the value they bring."
>
> LINDA PITTENGER, ANALYST, PEOPLE³

The Acid Test

To help determine how much value an employer places on IT and technology jobs in particular, People³ analyst Linda Pittenger suggests getting answers to the following questions:

- **Has the IT organization's funding increased or decreased over the past two to three years?**
- **How many IT jobs have been cut in the past two to three years?**
- **What kind of ongoing technical training does the company offer?**
- **How long has current IT management been in place? (Newer leadership tends to be most interested in emerging technologies.)**

The Transnational Technologist

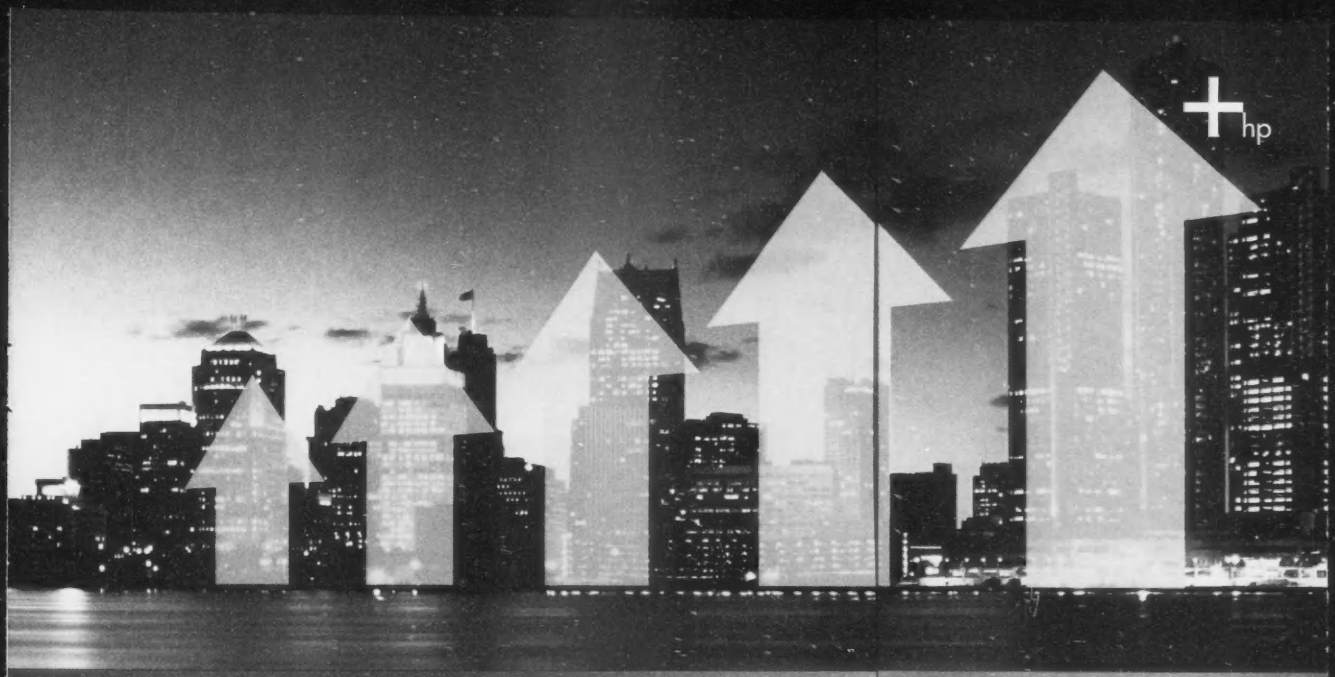
Operations manager Adam Nichols returned home to Pennsylvania in April after spending three months in Pune, India, where he oversaw the setup of Synygy's 53-person offshore software development and customer services center.

"There was a call for two people to get the office started, and I jumped on the opportunity," says Nichols, who has worked in both pure technology and business roles in his four years at Synygy.

Nichols says one of his biggest challenges in India was working with the communications infrastructure. To minimize problems with transmission quality, he developed new procedures and deployed some additional technology to exchange documents between offices in the U.S. and India. Nichols also worked on a replication project to duplicate the company's internal servers at the two locations.

"I saw it as a huge benefit, both personally and professionally," Nichols says. "Anytime you have the opportunity to take on a new challenge and a new culture and lead something from the ground up, it's an opportunity. I gained experience. I gained world experience."

– Julia King



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Career Watch

Bogdan Butoi

TITLE: CIO

EMPLOYER: Animas Corp., West Chester, Pa., a manufacturer of insulin pumps.

Q&A

Animas, which has grown from 11 to more than 300 employees in three years, needed to expand its IT infrastructure but didn't have the IT staff to do it. So Butoi turned to Drexel University for help. In the past four years, Butoi has hired eight computer science students who have spent six months working at Animas as co-op employees as part of their university programs. He has also found a way to convert some of the best students to full-time employees who remain at the company today.

How did you go about converting co-op students to full-timers? We made an offer of a full-time job if they would agree to go to school at night. We paid their tuition plus paid them a salary like any other IT employee.

How much do they earn? It's based on school guidelines. We've started them between $12 and $14 an hour. You can go extra if the student is perfect. You have to judge them when you interview them. Companies interview about 20 students, then both the students and employers put their preferences into a matching system. This matches students' interests with companies' needs.

Do you require the student workers to sign a contract or any other kind of agreement about how long they'll remain with your company? In the beginning, no, we didn't initiate a contract. But now, as the company is going public, we offer stock options [as a means of retaining] workers.

Are there any special challenges to managing and/or motivating student workers? You have to understand that some projects will not get done as soon as possible if you want [student workers] to learn. It's better to give them a project they have to figure out how to do. That gives you a better idea of their potential. Don't just give them procedures to execute. When we were looking for a document management solution, we gave co-op students the task of looking for open-source, Web-based solutions that we could use internally. We had them get a demo of the software, make it work and then show it to us. – *Julia King*

Highest-Paying IT Certifications, Q1 2004

CERTIFICATION	PREMIUM AS A PERCENTAGE OF BASE PAY
Project Management Professional	16%
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Global Information Assurance Certification Security Expert	11%
Microsoft Certified Database Administrator	11%
Microsoft Certified Solution Developer	11%
Novell Master Certified Network Engineer	11%
Oracle Certified Professional	11%

Base: 42,000 public- and private-sector IT workers ■ SOURCE: FOOTE PARTNERS LLC, NEW CANAAN, CONN., APRIL 2004

Nice Work If You Can Get It

22% Percentage of companies that have 500 or more open positions that require some level of government security clearance

61% Percentage of companies that have seen "significant increases" in the contractual requirements for government-cleared workers over the past five years

Base: 51 ITAA member companies ■ SOURCE: INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA, ARLINGTON, VA., APRIL 2004

Numbers Crunch: IT Hiring Scorecard

538,000 Number of jobs cut by computer hardware companies in the past three years

14,000 Number of jobs added by computer system design companies since July 2003

2,000 Number of jobs added by the same companies between December 2003 and March 2004

2,700 Number of jobs added by Internet publishers since May 2003

85% Percentage of high-tech companies with plans to add to head count this year

24% Percentage of high-tech companies with plans to add between 25 and 49 people

61% Percentage of high-tech companies with plans to add fewer than 25 people

0 Number of high-tech companies with plans to hire 50 or more people this year

SOURCES: *WALL STREET JOURNAL*, BUREAU OF LABOR STATISTICS, DELOITTE & TOUCHE LLP

Don't Oil the Squeaky Wheel

FORGET LAVISHING YOUR ATTENTION on troublemakers and poor performers. If you're an IT manager who wants your team members to be productive, positive and energetic, you must spend the majority of your time with the workers who behave that way.

So says Wolf Rinke, a human resources expert based in Clarksville, Md., and author of *Don't Oil the Squeaky Wheel: And 19 Other Contrarian Ways to Improve Your Leadership Effectiveness* (McGraw-Hill, 2004).

If a worker's weaknesses consistently outweigh his strengths, even after appropriate coaching and training, Rinke recommends reassigning the employee to an area that could potentially build on his strengths. If that doesn't work, or there is no other place to send him, it's time to take drastic action and fire him, Rinke says.

Dorai Thodla, chief technology officer at iMorph Inc. in Palo Alto, Calif., recommends hiring new IT employees with the understanding that they will be re-evaluated after six months. "The reason is simple. Lots of people claim they have three or four years of experience, but what they really have is one year of experience repeated three or four times," Thodla says.

At some companies where he has worked, "we used to have people hang on for a year, but we found it put more pressure on better-performing employees," Thodla says. For example, if a software tester does a shoddy job, it drives up costs and shifts an additional work burden to customer service personnel. "It also can drive down morale," he adds, "because people see a guy who isn't performing but is getting the same pay." 46770

– *Julia King*

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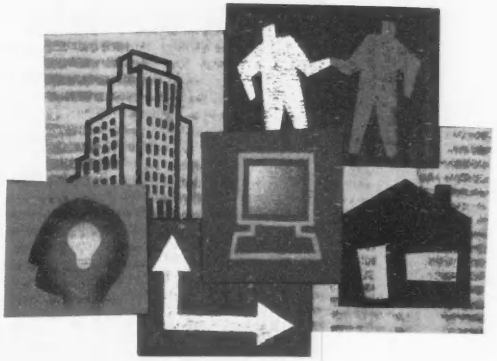

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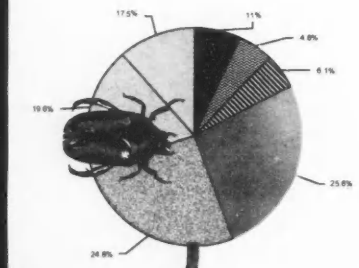
SPREADSHEET Overload?

Spreadsheets are growing like weeds, but they may be a liability in the Sarbanes-Oxley era. By Alan S. Horowitz



IN THE BEGINNING, there was VisiCalc, the first killer app for the PC. Lotus 1-2-3 subsequently took over, before yielding the throne to Microsoft Corp.'s Excel. Today, spreadsheets are so easy to use and ubiquitous that they've sprouted like weeds throughout most companies. And they often hold important financial data.

But what if Mary's sales spreadsheet differs from Tom's and has faulty data or a modeling error? What if Tom hoards his spreadsheet data — it's a form of power, after all — and won't let go? How do you get the data from dozens of far-flung spreadsheets into a companywide planning or budgeting system that meets the latest accounting standards?

Various studies report that 47% to 64% of companies use stand-alone spreadsheets for planning and budgeting, for example. But critics say spreadsheets — invented as a personal productivity tool — aren't well suited to collaboration, data quality or regulatory compliance. "Excel is a tool of information mavericks," says Eleanor Taylor, manager of business intelligence strategy at software vendor SAS Institute Inc. in Cary, N.C.

"Besides being extremely unwieldy for processes involving large volumes of data and multiple users, spreadsheets often contain substantial, material errors, according to academic research," wrote Paul Hamerman, a Forrester Research Inc. analyst, in a report last year (see sidebar, next page).

Companies are just starting to look at the problems caused by spreadsheet proliferation, says Gartner Inc. analyst Michael Silver. "Some enterprises are addressing it, but most aren't," he says.

No one is suggesting that the spreadsheet is going away anytime soon or that it's a top-of-mind IT issue. "The subject is certainly of interest and has potential for improvement, but in the scheme of things, it's not high on the list of priorities," says Joe Iannello, CIO at watchmaker Movado Group Inc. in Paramus, N.J.

What's the Problem?

Questioning the desirability of spreadsheets, after their widespread acceptance over the past two decades, is almost like questioning mom and apple pie. But for a modern corporation looking for consolidated planning and financial reporting, spreadsheets pose challenges not dreamed of when they first began popping up on PCs across the land.

Here are three of the more significant spreadsheet issues that companies have to address:

DECENTRALIZATION. Mentor Graphics Corp. in Wilsonville, Ore., had a central 25MB Excel spreadsheet and 1,200 budget spreadsheets across the enterprise, one for every cost center. But having numerous spreadsheets makes it difficult to collect important data. "Spreadsheets are great analysis tools, but at some point you start using them as a planning system, and that's where Excel starts breaking down," says Jan-Willem Beldman, Mentor's enterprise data architect.

So Mentor decided to use SAP AG software as a centralized database of accounting transactions and Hyperion Solutions Corp. software as a budget planning tool. The Hyperion system allows Mentor to quickly do a what-if analysis of, say, changing

Easy Does It

ED CHEN, IT director at KQED in San Francisco, is gradually moving away from using spreadsheets as the broadcasting company's main data analysis tool. The organization has about 300 Excel spreadsheets scattered among its business units.

"We are in the process of creating a data warehouse that will combine several database sources together, and it will have a sophisticated business analytic tool running against it," Chen says.

The goal is to use a yet-to-be-selected analytic application to automate much of the standard analyses currently done by the Excel spreadsheets while providing capabilities that go beyond what a standard spreadsheet can do. "Using Excel to generate business analytic reports will be phased out" over a period of about two years, Chen says.

Spreadsheets won't disappear, however. They still have "important business metrics, logic and, sometimes, historical data," he notes. But their role will change. "Spreadsheets will augment the business analytics of tomorrow, as a presentation tool more than an analytic one," Chen says.

– Alan S. Horowitz

employee benefits in various countries. "These are things you might be able to model in Excel, but if you have a lot of details, it's much more than you could have in a spreadsheet," says Beldman.

COMPLIANCE. Having financial data in a hodgepodge of spreadsheets also makes it hard to maintain one version of the truth [QuickLink 43119], which is important for complying with the law. For example, the Sarbanes-Oxley Act requires companies to maintain a good audit trail, and generating such a trail is difficult to do with Excel, Beldman says.

"With financial data, the risk of using spreadsheets is too high under Sarbanes-Oxley," says Hamerman. "Let's say you use spreadsheets for consolidations of financial reporting. I think there's a chance for errors to occur in the spreadsheet formulas in this environment. That's a risk the company shouldn't take."

DIRTY DATA. "One major issue with spreadsheets is poor data quality. As you make changes or add information, your spreadsheet will have errors or mismatched formulas," says Ed Chen, director of IT at KQED Inc., which operates public television and radio stations in San Francisco.

That's why some users are moving from decentralized data held in spreadsheets to a centralized database. "The quality of data improves greatly because you have much more control of the different calculations," Beldman says.

Spreadsheet incompatibilities can even cause conflicts within a company. "If I have developed a spreadsheet, I trust my spreadsheet more than yours, even if yours [is really] more accurate. That creates political problems," observes Shaku Atre, president of Atre Group Inc., a database and business intelligence consultancy in Santa Cruz, Calif.

Reality Check

To some extent, the criticism — it's been called "the demonization of spreadsheets" — comes from vendors pushing their own, more expensive financial software, such as business performance management software. Vendors put out press releases with headlines like "Spreadsheets Out, Hyperion In" and "Extensive Reliance on Spreadsheets Dulls CFOs' Strategic Edge," while arguing that spreadsheets won't help companies comply with the Sarbanes-Oxley Act.

"Only to a degree is that true," says Chris Iervolino, head of ITEC Consulting Inc. in White Plains, N.Y. He says it's true that spreadsheets aren't a good corporate data store, and they aren't good for managing processes like planning and budgeting because there's too much error-prone manual work involved. For Sarbanes-Oxley compliance, it's easier for executives to sign off on the integrity of a financial process if it's fully automated, without manual steps like in spreadsheets, Iervolino says.

"But that doesn't mean spreadsheets are down and out," he continues. Iervolino and other observers say the future of the spreadsheet is as a user interface for manipulating data extracted from a central, back-end database. "[Spreadsheets] are a great manipulation and analysis tool; they're not such a great database," says Beldman at Mentor Graphics.

Besides, it would be hard to snatch spreadsheets away from the power users. "You'd have to pull the spreadsheets from the cold, dead hands of the analysts," Iervolino quips. That's why the vendors of even the most sophisticated business performance management tools have interfaces for connecting to spreadsheets — it's a market requirement.

"People can quickly become computer-literate [with spreadsheets]. They feel empowered; their confidence is boosted," Atre says.

So be prepared for resistance when moving to a centralized system. "Trying to get people *not* to save data locally and *not* to do their own spreadsheets is a cultural problem based on 15 years of PC use," Gartner's Silver says.

Although spreadsheets have significant shortcomings, they provide enough benefits — usability, what-if analysis and presentation graphics — that most observers say they'll be around for the foreseeable future. "They will persist as an interface that people will continue to use to manipulate and store data," says Herbert A. Edelstein, president of Two Crows Corp., a data mining consultancy in Potomac, Md. "I can't envision a world where the spreadsheet will disappear."

Prashant Dholakia, senior vice president at FreeMarkets Inc., a procurement services provider in Pittsburgh, isn't so sure. Someday, large corporations may have to consider a postspreadsheet world, Dholakia says. "Spreadsheets can go only so far," he says. "Something will have to replace it, but there's no consensus of what that is." **46772**

Horowitz is a freelance business and technology writer in Salt Lake City. Contact him at alan@ahorowitz.com. Additional reporting by Mitch Betts.

Oops!

Audits find errors in 49 out of 54 spreadsheets

Washington-based Fannie Mae made a **$1.2 billion accounting error** last year because of what it called "honest mistakes made in a spreadsheet" used in the implementation of a new accounting standard. Toronto-based TransAlta Corp. took a **$24 million charge** last year after a bidding snafu caused by a cut-and-paste error in an Excel spreadsheet.

These are spine-chilling mistakes, but research indicates that many company spreadsheets have errors. Anecdotal evidence suggests that 20% to 40% of spreadsheets have errors, but recent audits of 54 spreadsheets found that 49 (or 91%) had errors, according to research by Raymond R. Panko, a professor at the University of Hawaii.

Either way, the amateur programmers who set up and use spreadsheet models are making a lot of mistakes, experts agree, in part because of a lack of training in model development and testing.

The mistakes range from **mechanical errors** (such as pointing to the wrong cell when entering a formula) to **logic errors** (such as entering the wrong formula) when setting up the spreadsheet, Panko says in a research paper. "Developers are overconfident, and policies are lax," he adds.

"Most casual enterprise users perceive data as movable from cell to cell with little unforeseen consequences," says Ed Chen, IT director at broadcaster KQED in San Francisco. "They need to be made aware of the nature of the data they are dealing with and what might happen to it when they manipulate it."

Microsoft provides a basic auditing tool in Excel, but the high risk of spreadsheet errors has spawned a tiny industry of spreadsheet auditors, add-in auditing tools and researchers. (Just type "spreadsheet errors" or "spreadsheet audit" into a Web search engine to find these resources.)

Longtime database consultant Shaku Atre cautions, "I have seen people using spreadsheets for anything and everything under the sun – and many times they use them wrongly. Provide good training."

– Mitch Betts and Alan S. Horowitz

Online Resources

To learn more about spreadsheet risks, visit:

- Professor Raymond R. Panko's Web site
- European Spreadsheet Risks Interest Group

EXEC TRACK

Citron Named CTO at Rodale

Rodale Inc., a publisher of self-help books and magazines in Emmaus, Pa., announced that Ken Citron has been named senior vice president and chief technology officer. Citron will have worldwide responsibility for IT strategy and all IT functions, including editorial, financial, marketing, distribution and fulfillment systems. Prior to joining Rodale, Citron served as senior vice president of information systems at Sony Music Entertainment Inc.

Schnier to Head VeriFacts IT Staff

Cynthia Schnier has joined the management team of VeriFacts Automotive LLC as CIO. Newport Beach, Calif.-based VeriFacts provides technical and training services to the collision repair industry. Schnier will design and implement workflow and management reporting systems. She previously served as CIO at Insurance Auto Auctions Inc.

Washington Mutual Names New CIO

Debora Horvath has been appointed executive vice president and CIO at Washington Mutual Inc., a financial services retailer in Seattle. Horvath is a 25-year veteran of General Electric Co., where she was CIO at GE Insurance and GE Financial Assurance. Former Washington Mutual CIO Jerry Gross has become executive vice president of technology. He will focus on special projects.

Yaros Will Lead Pinnacle IT Group

As part of a restructuring, Justin Yaros has joined Pinnacle Systems Inc. in Mountain View, Calif., as CIO. Pinnacle provides digital media creation, storage and playback products. Yaros previously served as CIO at Sony Pictures Entertainment.

PAUL M. INGEVALDSON

Alignment Is a Team Effort

THE IT PRESS IS FULL of articles on aligning IT with the strategy of the corporation. The questions abound: "How do we align our projects with corporate priorities?" "How do we know we're working on the right projects?" "Why doesn't management feel good about IT?"

Guess what: IT seems to be the only department in most companies that worries about this. Have you ever heard questions about whether Finance was aligned? Or Sales? Or Operations? Or Legal? Of course not. If they're not working on strategic projects or processes, the CEO will find new leaders who will.

PAUL M. INGEVALDSON is senior vice president for technology at Ace Hardware Corp. in Oak Brook, Ill. Contact him at [illegible]

In many ways, IT gets the same treatment. If we aren't working on the strategic projects, the CIO gets replaced. But replacing the CIO won't solve the problem if the company doesn't understand how to align IT with the business.

Alignment isn't easy. It requires that senior management be prepared to approach IT in a different way. It requires that IT get its fair share of executive time, which it deserves, since IT spends from 2% to more than 10% of the revenue line. It depends on the recognition that not only is IT essential to the corporate strategy, oftentimes it *is* the strategy.

As is usually the case, real change starts at the top. If IT isn't working on the strategic projects, look at how projects are initiated. Often, senior executives are uncomfortable managing IT and abdicate the responsibility for the strategic automation agenda to the CIO. If that occurs, the process is doomed to fail.

Certainly, the CIO will try to determine the most strategic projects to take on, but he will have an impossible time trying to select one over another. Indeed, the very process of making this selection is full of political pitfalls that could crush most CIOs. Would you want to be the CIO who tells one department that its critical project is less important than another's?

Instead, strategic prioritization is a legitimate and required role of the corporate officers. The size of the company doesn't matter. Bigger companies have bigger projects, but the principle is the same. If the strategic IT priorities are determined by a consensus of the officer group, then IT can never be blamed for not being aligned. It's as simple (or as difficult) as that.

The role of IT in this type of situation is a little bit different. First of all, IT must be aware of new technologies and be prepared to present new opportunities to user management.

But if IT can't convince user management of a worthwhile technology opportunity, it shouldn't waste its time there. Even smart IT people may not fully understand the intricacies of each user department, and the technology may not be appropriate for that department at that particular time. Remember, line management runs the company, not IT. Go to another department where automation efficiency is understood and supported and the timing is better.

Once a user department shows interest in a project, IT can provide support, but the user department must take the responsibility to sell the project internally and calculate the return on investment. IT analysts can do much of the legwork here, but the ROI calculation includes the total costs to be saved within the department, not just the cost of IT. And user management must be committed to realizing the ROI.

What is IT's role in all this? We must be sure we understand the users' needs and the needs of the system, and we must make good estimates of both time and money. We must ensure that we have a stable IT environment, and we must be sure that the systems we build will be efficient. We must work on the retention of our technical staff so that projects roll out on schedule and our IT departments have continuity of knowledge.

This approach gets the entire company involved in IT project management, from the CEO and the officer group to the individuals working in the department. The result is that IT is strategically aligned, just as Finance, Operations, Legal and Sales are. What a concept! **46101**

NO MORE IT PROJECTS

You should stop putting an "IT" label on business projects just because they involve an element of technology, says Maryfran Johnson: **QuickLink 45747**

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8:15am to 8:45am	**Rebuilding the IT Foundation** Maryfran Johnson, Editor in Chief, Computerworld
8:45am to 9:15am	**Infrastructure Makeover: Moving the U.S. Air Force Toward Network-Centric Services Delivery** Brigadier General Brad Butler, Deputy Chief Information Officer, U.S. Air Force
9:15am to 9:45am	**User Case Study**
9:45am to 10:15am	Refreshment and Networking Break
10:15am to 10:45am	**Customer Challenges and Solutions: Real-Life Scenarios Connecting Data Centers Over Distance** Steve Adolph, CTO, Enterprise Solutions Group, CIENA
10:45am to 11:15am	**Network Consolidation and the Data Center: Boosting Business Performance and Application Availability** Richard Villars, Vice President, Storage Systems, IDC
11:15am to noon	**Strategies for Streamlining Key IT Resources** Panel Moderator: Maryfran Johnson, Editor in Chief, Computerworld Panelists: Stephen Morin, CIO, TAC Worldwide Companies; Kamal Narang, CTO, CTIS, Inc.
Noon	Program Concludes

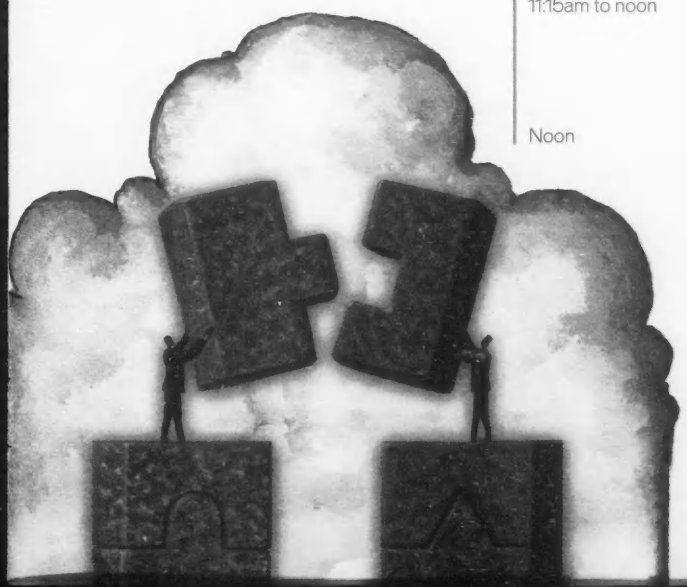
Selected speakers include:

Maryfran Johnson
Editor in Chief
Computerworld

Brigadier General Brad Butler
Deputy Chief Information Officer
U.S. Air Force

Steve Adolph
CTO, Enterprise Solutions Group
CIENA

Richard Villars
Vice President, Storage Systems
IDC



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IT Careers: The Job Picture

This is the first of two articles that IT Careers will publish in cooperation with the Information Technology Association of America (ITAA) studies on 2004 job outlook and specifically the software development job category.

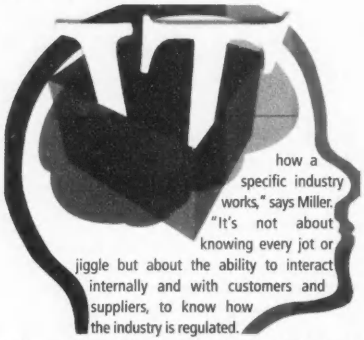
While the information technology industry sector plunged from 2000 to 2003, international events created an increasing awareness that software development and technology infrastructure are critical to the nation's security and global economic leadership. That was the focus of the recent National Software Summit, where participants tackled infrastructure trustworthiness and adequacy of current software research and development, but also maintaining the world's leading software workforce.

Harris Miller, president of ITAA, worked with a team of leaders from IBM, Northrop Grumman and Microsoft as well as academia, to address the workforce issue and present findings at the summit. Key among the findings of the team were:

- After a three-year slump, technology hiring is going up.
- IT workers need to be able to navigate across the economic range of opportunities, not just in technology companies.
- There's a need to prioritize the most important and credible certifications for hiring clarity.
- Creativity and imagination – the ability to "think outside the box" are in high demand.

Over the next three to five years, demand will be highest for information security, network design/administration, programming/software engineering job categories.

"Hiring managers will view a straight technology worker as not being as valuable as one who understands the business model and



In the past, these skills were required only at the top end of the (IT) profession." ITAA's Global Outsourcing study found that the technical-only skills are most easily outsourced; the complexity of applying technology to create new business growth and opportunity is more valued and less likely to be outsourced.

One of the most difficult skills to speak about in job interviews is the "think outside the box" ability. Miller says the best way to do this is for job candidates to explain to hiring managers an actual experience where they looked beyond the visible problem or challenge to create something much more valuable. "For instance, if you were asked to perform a maintenance update but along the way found that there was a better approach to integrate databases that had been stovepiped – that's an example of this thinking. It's what will differentiate you from the other 500 people who have applied for the same job."

The team did note that there is more focus on IT professionals having more than one major area of study to complement technical skills. "Everyone is talking about it," Miller says," but it is not yet a dominant trend. Most companies, when running an ad to hire someone, run the same kind of ad listing technical skills. Companies on the cutting edge are trying to break into new areas of business and they're listing a broader set of capabilities required."

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To be considered for this position please go to www.acs-inc.com , Career Opportunities, Current Openings, Rockville, MD, and click on Senior Product Manager, VECTOR, SL-TSS-TCC 22089, to apply on-line.

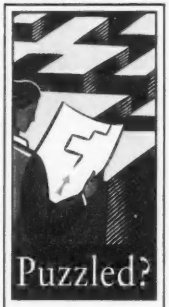
DATABASE ADMINISTRATOR

Developing & maintaining MFG/PRO modules - Inventory, Sales/Distribution, Mfg., Accounts Payables, Accounts Receivables, General Ledger, Cost Mgmt. & Pricing. Developing reports & maintenance screens based on user requirements. Troubleshooting user problems in the software. Developing/maintaining MFG/PRO - Point of Sale (POS) interface. PROGRESS programming & analysis; PROGRESS database mgmt. Legacy system conversion & implementation of MFG/PRO as acquisition companies. Perform system administration tasks for HP-UNIX servers, including install, manage & maintain test & production database environments; database tuning, develop/administer backup, restore, disaster recovery procedures; create optimal database configuration to service business needs. Manage EMC storage system and Symmetrix software. ORACLE PL/SQL programming. Bachelor's degree in Computer Science, Engrg. or Bus. Admin. plus 3 yrs. experience in offered position or as Database Administrator, Technical Consultant, or Systems Analyst/Programmer required. Must know PROGRESS programming language; PROGRESS & SQL database mgmt.; ORACLE SQL & Microsoft SQL software; HP-UNIX operating system (systems administration, shell scripting, & Awk/Sed language). Expertise required with MFG/PRO integrated systems inventory, sales/distribution, mfg. & financial modules in design, implementation & training of users. 40 hr/wk, OT as required, 8am- 5pm. $65,558/yr. Send resume to Ginny Burton #3883, Dept. for Employment Services, 275 E. Main St. 2-WA, Frankfort, KY 40621. Only persons with authorization to work permanently in the U.S. need apply. EQUAL OPPORTUNITY EMPLOYER.

SQL & Web Engineer wanted to develop & architect solutions for internal customers using company structured methodology, 3-tier architecture & one of the following technologies: Lotus Script, Lotus formula language, ASP, COM+, VB, develop clear, concise & professional tech. & user documentation; lead & perform the Bus. Analysis phase of projects incl. Reqt. Analysis, High Level Design, Workflow Analysis & Design, Info. Flow Analysis & Design; effectively estimate solutions design & implementation for projects using accurate time estimates; provide tech. support to client & IT mgmt. to ensure develop. of efficient application systems utilizing established standards, procedures & SDLC methods; act as a point of contact for customer engagements; assist w/develop. of proposals; integrate disparate systems for various internal depts.; admin., maintain & upgrade the 3rd party 'Perception' Online Training Server & all other 3rd party solutions; maintain & upgrade web App. templates using co. templates; maintain & upgrade Microsoft IIS Web Apps. & Lotus Workflow Systems. Must have Bach. deg. in Comp. Sci., Eng., or related field & 2 yrs. exp. developing data-driven web apps. on MS & Lotus platforms, including exp. w/ASP, VB, Lotus Script, Lotus Formula Language, & Lotus Notes/Domino Development. 40 hrs/wk. Salary $70,000/yr. Send two resumes to Case No. 200300027, Division of Career Services, Labor Certification Unit, 19 Staniford Street, 1st Floor, Boston, MA 02114.

SOFTWARE DEVELOPERS. Develop standard features, interfaces and complex modules for existing or new software products to provide major feature implementation to client base of standard customers. Actively participate in innovative new designs, technologies, research projects and their implementations. Learn new proprietary technologies and development tools, developed in-house, as well as adapt to non-SQL type databases. Effectively convey expert research findings on complex technologies to a wide audience. In order to emphasize quality, provide clear and complete models and documentation. Develop utilities to assist in the quality control of the features developed (multiple openings). Requires 7 yrs of experience, or B.S. in Computer Science or related field and 5 yrs experience, in job offered or software development. Experience must include 5 yrs programming in Delphi. Experience must also include: 2 yrs working with SQL databases (Sybase, Microsoft SQL Server, Oracle); developing client/server applications - both 2 tier and 3 tier; development of middleware technologies (MIDAS, COM, CORBA, CGI, ISAPI); and development in a Web environment (Active Server Pages, JavaScript). Must have proof of legal authority to work in the United States. Send resume with SSN to Andrea Weston, Ontario Systems, 1150 West Kilgore Avenue, Muncie, IN 47305.

MAINFRAME ANALYST/PROGRAMMER: Writes, updates, maintains programs written in COBOL/CICS for mainframe and financial services clients. Creates/maintains IDMS/R databases. Reviews work flow charts, development by system analyst/programmers to understand/advise on the computer tasks to perform. Creates description for programmers/ systems analysts to understand how program should access data. Writes physical database description to protect it from unauthorized access and tampering. Provides technical support and guidance for COBOL systems. Coordinates changes in computer databases. Reviews changes in physical design of databases to assess effect on physical databases. Establishes computer access level for each segment of database. Specifies user access level for retrieval, modification, deletion. Conducts quality control testing on codes and correcting errors. Enter codes to create production databases and utilities programs to monitor performance of database. Modifies data in fine-tuning database operations. Generates prototype for potential clients to visualize applications. Job is in Miami, FL. 40 hrs. weekly, 9-5 pm. $61,000/yr. Bachelor's degree or equivalent, based on education or experience in Computer Science or related field plus 2 years experience in job offered. Mail resume to: SMX Services & Consulting, Inc., 7220 NW. 36th St., Suite #421, Miami, FL 33166. Attn: Amneris Hampton.



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SAP Senior Consultant

GlaxoSmithKline, Research Triangle Park, NC. Provide expert second line support using business process and Production Planning, Execution, and New Product Introduction ("PP/ PP-PI") application knowledge for pharmaceutical company. Solve complex and original problems and provide expert technical guidance on PP/PP-PI processes. Carry out detailed impact assessments for proposed change requests, propose alternative cost-effective solutions where appropriate and lead, evaluate, develop, test and arrange release of developments according to GSK validation procedures. Work with other functions to identify opportunities for process improvement and assist in the implementation of those agreed. Req.: Bachelor's or foreign equivalent in CS or Engineering. 3 years of experience in job offered or as SAP Consultant. Following experience, which may have been obtained concurrently: 3 years of experience in Production Planning, in specification and configuration of SAP (incl. version 4.6) and in SAP development in PP/PP-PI areas; 2 years of experience in the pharmaceutical industry; and 2 years of experience in the selection, configuration, implementation and maintenance of PP/PP-PI systems.

GSK is dedicated to an innovative workplace and supports you with career-long opportunities & learning. We offer a competitive benefits and compensation package. For confidential consideration please forward 2 copies of resume to: BHG Box 34980, 220 E. 42nd St., 14th Fl., NY, NY 10017. Indicating ad code "SAPSC" is essential. Principals only, no agencies. GSK is proud to promote an open culture, encouraging people to be themselves and giving their ideas a chance to flourish. GSK is an equal opportunity employer.

Programmer Analyst/ Consumer Website Developer

Cablevision

Our leading telecommunications and entertainment company has an excellent opportunity for a professional to develop applications and provide technical assistance to support consumer websites. A solid understanding of object oriented programming is mandatory. A minimum of 2 years experience with Java, J2EE, along with familiarity with ATG, BEA, IBM, Tomcat and JRUN required. ATG consumer experience strongly preferred. Prior background in XML technologies including XSL, Soap and Web services desired. A thorough understanding of relational database structures and concepts, database administration, SQL and Oracle programming along with application development required. Experience developing and deploying web applications in a multi-tiered distribution environment highly desired.

Position also requires a BS/BA degree or equivalent work experience including technical training. A minimum of 2 years systems analysis and programming experience a must. Proven hands-on background with ATG Dynamo Consumer Commerce Suite and Dynamo Application server is preferred.

Competitive salary and excellent benefits.

Email resume w/salary history and job code: #0524CW0003CAM to: careers@cablevision.com

EOE

Sr. Business Intelligence/ Knowledgebase Analyst wanted to mng. & oversee corp. knowledgebase & bus. intel. solutions; identify & prioritize need areas w/in overall organizational architecture to design solutions & provide solution guidance from conception to completion; analyze, design, dev., test, implement & maintain knowledgebase mngmt. sys., knowl. databases, bus. intel. apps., & data warehouse arch.; analyze & consolidate corp. knowledgebase (incl. Finance, Sales, HR, Cust. Serv., Procurement, Eng., Services, etc.) in various formats for data warehouse arch.; dev. reporting & analysis tools for the co.'s bus. intel., incl. global sales budget & profit contrib.., sales comp., payroll time tracking, quality control, procurement & supply chain, & corp. oper. expense budget & bus. unit income contrib.. using Oracle Enterprise Resource Planning Application (ERP) & underlying database design, PL/SQL, Java, Visual Basic & Unix shell; utilize Oracle Electronic Transfer & Loading Utility & Oracle Warehouse Builder (OWB) to consolidate corp. sales data in various formats; implement automated report distribution; categorize Plasma tech. & corp. training data into digitized formats & create underlying databases; design & implement web-based, graphic user interfaces for info. access & retrieval using PL/SQL, Java, Java Script, JSP, HTML, XML, Oracle Application Server (OracleAS) & Oracle Portal on Windows & Unix platforms; design & develop Extranet & Internet using digital info. mgmt. Must have Master's deg. in Comp. Sci., Info. Mgmt. or related field & 2 yrs. of exper. designing, developing & maintaining knowledgebase mngmt. sys. & data warehouse apps. using Web interfacing tools, as well as exper. using ERP, OracleAS, Oracle Portal, Oracle Database 7 to 9i, OWB & Oracle Developer & exper. programming w/Java Servlet, JSP, XML, & Unix Shell. 40/hr/wk. $68,000/yr. Send 2 resumes to Job Order #2004-367, P.O. Box 989, Concord, NH 03302-0989.

Sr. Network Consultant sought by software consulting company in Denver, CO to work in Cupertino, CA and other unanticipated job sites in the U.S. to, at a senior level, be responsible for network development, installation, testing and administration. Analyze user requirements for network bandwidth and security for Local and Wide area networks. Develop network architecture for Cisco networks based on Ethernet, Gigabit Ethernet, ATM, Packet over SONET (PoS) and Frame Relay using Cisco routers, Switches and Firewalls for Local and Wide Area Networks (LAN & WAN). Develop and implement routing protocols such as Open Shortest Path First (OSPF), Routing Information Protocol (RIP), Enhanced Interior Gateway Protocol (EIGRP) and Border Gateway Protocol (BGP) for routing Transmission Control Protocol and Internet Protocol (TCP/IP) in large LANs and WANs. Create and implement plans for network security. Provide training and support and engage in project management as required. Requires master's or equivalent in Electronics and Communication or related field; specifically requires master's degree or foreign equivalent or a bachelor's degree or foreign equivalent plus 5 yrs. exp.; 2 yrs network administration experience; working knowledge of Cisco networks, EIGRP, OSPF and frame relay. The 2 yrs network administration experience may be concurrent with the 5 yrs required for the master's. M-F; 8am-5pm; $75,000/yr. Respond by resume to Employment Programs, PO Box 46547, Denver, CO 80202 and respond to JON CO5077643.

Chief Operating Officer. Direct the Management of German owned subsidiary company specializing in the development, customization and implementation of Customer Relationship Management ("CRM") systems; direct corporate operations, including strategic planning, CRM systems development and implementation, quality control and client development and relations; and serve as Chief Liaison with German parent company responsible for preparing reports in German on US corporate and financial operations, strategic planning and profitability for German executives, owners and Board members. Must have a Master's degree or foreign equivalent in business administration with a concentration in computer science or a related field and six years of executive or managerial level experience managing software systems development, or a Bachelor's degree and eight years of experience as stated. Experience must include at least 2 years of executive-level experience directing corporate operations of a software company with annual revenues exceeding $10 million.

Vice President of Professional Services. Direct the Management of the design, development, customization and implementation of multi-million dollar Customer Relationship Management ("CRM") systems from pre-sales through post go-live support, including technical systems specification, project planning, pricing and contract negotiation and client relations; manage CRM Project Managers, Engineers and other technical support staff, providing technical guidance to development and implementation teams in the US and Germany; serve as Chief Technical Liaison to German Parent Company, responsible for co-development of systems solutions and training of US staff on systems developed in Germany. Must have ten years of executive or managerial level experience managing software systems development. If interested, submit resume in duplicate to:

Ms. Cassandra M. Stewart
Human Resources and Office Manager
CAS Systems of America, Inc.
1100 Abernathy Road
Building 500, Suite 750
Atlanta, Georgia 30328

Software Engineer - InterContinental Hotels Group is seeking qualified applicants for positions at the company's North American headquarters in Atlanta. Develop real-time revenue management applications for use in multi-platform environment. Requires relevant degree and experience with revenue management systems for hospitality/tourism industry. Apply to Francene Taylor, Six Continents Hotels, Inc., Three Ravinia Drive, Suite 100, Atlanta, Georgia 30346.

Software Engineer to perform sys lvl prod testing, which includes network comm. & connectivity tests; equipment initialization & setup tests; sys. integration, & component lvl functional tests; user interface testing; regression tests; & version compatibility tests; perform prod design, sys analysis & prog activities. Bach in CS/EE/related field + 4 yrs exp + knowledge of SQA concepts and telecomm standards (SS7, TCAP, ISUP, IS41P, IS826 & IS771) + exp w/ scripting languages (Bourne, Shell, C-Shell, Perl, C++) req'd. Forward 2 resumes to: Lightbridge, Inc. 320 Interlocken Pkwy, Broomfield, CO 80021, Attn: Pat Jensen. Job # 1465.0051.

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- Focus, IDMS or SAS

DBA

- ORACLE or SYBASE
- DB2

Client-Server/WEB

- Siebel
- Websphere
- Com/DCom
- Web Architects
- Datawarehousing
- Informix, C or UNIX
- Oracle Developer or Designer 2000
- JAVA, HTML, Active X
- Web Commerce
- SAP/R3, ABAP/4 or FICO or MM & SD
- Oracle Applications & Tools
- Lotus Notes Developer
- UNIX System Administrator
- UNIX, C, C++, Visual C++, CORBA, OOD or OOPS
- WinNT
- Sybase, Access or SQL server
- PeopleSoft
- Visual Basic
- PowerBuilder
- IEF

Account Executives, Account Managers and Business Development/Account Specialist

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SYSTEM ADMINISTRTOR to maintain and develop Gentran Director EDI electronic data inter-exchange system with new and existing customers; develop Barcodes solutions; support Macola, SalesLogix, e-synergy ERP and CRM systems; support Citrix, Nfuse and terminal server applications; manage Windows Mobile Smartphone and Exchange 2003 integrated Messaging system; maintain Nortel phones, PBX and other voice communication systems; manage Windows 2003 Active Directory, SQL Server and Backup Exec. Require: B.S. in Computer Science/Information Systems. Competitive salary offered. Mail resume to: Attn: Vice President, EA International Ltd, 1050 Northbrook Parkway, Suwanee, GA 30024.

Programmer/Analyst, Washington, DC. Assist Team Leader in EAI project architecture elaboration, design & development designing processes based on automatic UML models translation & code generating. Reqd. B.S.C.S & 2 yrs exp including exp in J2EE, XML, Oracle, MS SQL, UML, IBM Web Sphere, Code generators. M-F, 40/hrs/wk. Send resume to S. Arsenyev, EastBanc Technologies, LLC, Ref. #99A1,3307 M Street, N.W., Suite 200, Washington, DC 20007.

R&D Algorithm Engineer

To design and implement algorithms for machine vision in manufacturing industries and participate in all stages of development process from requirements capture to final testing. Req. a Master degree in Computer Science, Electrical Engineering or related field, proficiency in Visual C++, Matlab (Image Processing toolbox, etc.) and working knowledge of Pattern Recognition. 40 hrs/wk. Send resume and cover to Emory Berry, DVT Corporation, 1855 Satellite Blvd, #100, Duluth, GA 30097.

Dot Hill Systems seeks applicants for the position of Principal Firmware Engineer in Longmont, CO to engage in design and development of software for network-based storage technology devices with embedded operating systems that utilize SCSI commands and protocols. Specify, design, develop and analyze Cache and RAID (RAID level 5, 5+0, 1, 1+0) software algorithms and Failover and Failback software algorithms. Position requires 5 yrs exp performing the duties and using the technologies above. Respond by resume to Eileen Jonikas, Dot Hill Systems, 7420 E. Dry Creek Parkway, Longmont, CO 80503.

Multiple positions available for integrated credit card services company. Seeking Development Mgr. & Sr. Team Leader. Positions require M.S. in Comp Sci. plus 1 yr exp or alternatively B.S. plus 5 yrs exp. Must include VC++, MS-SQL, Stingray. Send resume to Dynamic Currency Conversion, Inc., P.O. Box 1047, Nyack, NY 10960

Senior Engineer (Portland, OR): Develop & implement introspective & self-adaptive hardware & software sys. Design, implement, & evaluate new program representations. Consult w/ teams & clients to enhance reliability, scalability & performance of advanced computer system. Supervise project team & engineers to devise solutions. Min. req's: Ph.D. in Comp. Sci. or Elec. Eng. Plus 1 yr. specialized experience. Send resume to Melanie Peters, Business Manager, Reservoir Labs, Inc., 632 Broadway, Suite 803, New York, NY 10012.

Software Engineers needed in Milwaukee, WI. Seeking candidates possessing MS or equiv. and rel. work exp. Duties include: Analyze, design, develop, implement and test software applications. Exp must include 2 years working with RDBMS. Mail resume, ref and salary reqs to: Systems People, Inc., 1200 New Rodgers Road, #C7B, Bristol, PA 19007.

PROGRAMMER/ANALYST

Plan, devel, test, documnt comp sftwr using XML, JSP, EJB, JDBC, ASP, VB6, COM objects, XSL, Java Servlets Javascripts, DHTML, Linux, CSS, WebLogic & WebSphere w/ORACLE & SYBASE db's in Win & Unix envir. Bach degr & 2 yrs exp reqd. *Send resume to:*

HR Dept., Fulcrum Logic, Inc.
Short Hills Plaza
636 Morris Turnpike, Suite 2J
Short Hills, New Jersey 07078

Systems Analysts (ERP/Financials): Analyze, design & administer enterprise apps. and systems including financials/transport Admin./Mgmt. in Lawson Apps. (Financials/Admin.), Oracle, SQL Server, Unix, AS400, COBOL, VB. For complete job description or to apply, send resume/contact HR/IT-SA, URSI, 10701 Middlebelt Road, Romulus, MI 48174. No phone calls please. Principals only. EOE.

Seeking qualified applicants for the following positions in Orlando, FL: Senior Programmer Analyst. Formulate/ define functional requirements and documentation based on accepted user criteria. Requirements: Bachelor's degree or equivalent* in computer science, engineering, MIS or related field plus 5 years of experience in systems/applications development. Experience with C and/or C++, Java and UNIX also required. *Master's degree in appropriate field will offset 2 years of general experience. Submit resumes to LaWanda Thompson, FedEx Corporate Services, 1900 Summit Tower Blvd., Suite 1400, Orlando, FL 32810. EOE M/F/D/V.

PROGRAMMER ANALYSTS for Chicago, IL office. Design & Develop software applications using Oracle, Sybase, XML, Coolgen, Interwoven, ClearCase, ClearQuest, Plumtree, ITS, PVCS, UNIX. Bachelors or Equivalent req'd in Computers, Engineering, Math or any related field of study + 2 yrs of related exp. 40 hrs/wk. Must have legal authority to work permanently in the U.S. Contact HR Manager, Regency Technologies, Inc., 3130 N. Lake Shore Drive, # 1200, Chicago, IL 60645.

S/W QA Engineer to perform s/w component/app testing, including functional testing, installation testing, integration testing at the component level, stress/load testing at the application level, user interface testing, patch testing, documentation testing, & performance testing at the component level. Must have Bach in CS/EE/related field + 2 yrs SQA exp + knowledge of SQA concepts + test automation incl Winrunner & Test Director + exp w/ scripting languages, w/ installation of Oracle DB, and w/ telecomm protocol. Forward 2 resumes to Lightbridge, Inc. 320 Interlocken Pkwy, Broomfield, CO 80021, Attn: Pat Jensen. Job # 1465.0080.

McData Corp. seeks applicants for the position of Software Engineer in Sunnyvale, CA to design and develop software for data center storage switches that allow connectivity between hosts and storage devices. Requires bachelor's in computer science; 2 yrs exp working as a software engineer in Fibre Channel and SAN technologies; working knowledge of Fibre Channel protocol, protocol ASICs, operating system internals and writing device drivers (for LINUX or any flavor of UNIX). Respond by resume to: Peter Whittle, McData Corp., 380 Interlocken Crescent, Broomfield, CO 80021 and refer to JON4.

COMPUTERS - Software Engineers needed. Seeking qual. candidates possessing MS or equiv. and/or rel. work exp. Part of the req. rel. exp. must include 2 yrs. working with MS Visual Interdev & Visual Basic. Duties include: Design & develop call center/CRM software solutions; Plan & architect multi-tiered native & web applications; Work with Borland Delphi, MS Visual Studio.NET, Visual Basic, ASP.NET, MS Visual Interdev, Crystal Reports & SQL Server. Knowledge of 'C' desirable. Fwd. resume & ref. to: Sigmaworx, Inc., Attn: HR, 1515 Kimberly Rd., Davenport, IA 52807.

Systems Engineers needed. MS/BS or equiv. or rel. work exp. Part req. rel. work exp. must incld 3 yrs working w/ Oracle, Weblogic, & XML technologies. Duties incld: Design, configure, program & implement ERP & web based systems; Develop standardized methods, tech. & protocols for data comm. (incld data mapping); Provide tech. expertise for customer system integration & end-to-end partner testing. Work w/ Unix, Java, J2EE, JDBC, C++ Oracle 8 (& above) Weblogic, Web-methods, EDI & XML. Send res., ref., & sal. req. to Attn: HR Elemica, Inc., 1200 Liberty Ridge Rd., #120, Wayne, PA 19087.

Computer: Programmer Analysts needed. Seeking qual. candidates possessing BS or equiv. and/or rel. work exp. Part of the req. rel. work exp. must include 2 yrs working w/ C++. Duties include: Develop & test programs and software according to client projects; Perform regression, GUI & Functional tests. Work with C++, Oracle, PL/SQL, & Java. Send res., ref. & sal. req. to: Software Galaxy Systems, LLC., 1703 Dahlia Cir., Dayton, NJ 08810.

Application Developer reqd for s/ware Co. in Boston, MA. Duties: SystemStudy, dvlp, dsgn, review, rewrite, test & update applic for web based learning & implmt s/ware as per spec using JDK, JSP, Servlets, EJB, JDBC, Swing, Visio, Websphere and Weblogic. Knowledge in Adaptive Learning Theories. Instructional Design, SCORM 2004, IMSQTI, XML/IEEE, AICC Compliance is a must. 2 yrs exp as prgmr or in field & Bach reqd. 40 hrs/wk, 9a-5p. Resumes to: IDL Systems, Inc., 60 Mass Ave. Boston, MA 02115.

Programmer Analysts:

Design, develop, test, maintain and deploy business systems and technology solutions.

Min. Educ. Bachelor's degree or equi. Some positions require Master's degree or equi. Min Exp. - Adequate industry experience. Job may involve working at various locations throughout the US.

Please send resume to:
Selectiva Systems, Inc.
3333 Warrenville Rd. Suite 200
Lisle, IL 60532.

ENG. Jr. Software Engineer. Assist in writing comp programs that translate system codes/spec of CDR, CDRW DVD+R, +RW, ROM & RAM Drives. Generate specifications for user appl. Assist in prototyping, refining, testing & debugging. Req: Bachelor's in Comp Sci/Comp Eng. 40 hrs/wk. Job/interview site. Anaheim, CA. Resume to: Digital Peripheral Solutions, Inc. @ PO Box 27684, Anaheim, CA 92809

LABORATORY NETWORK ENGINEER for local drug and alcohol testing laboratory. B.S. degree in Computer Science/Engineering required. Minimum 2 years experience developing software and managing I.T. infrastructure. Experience with SQL Server development and administration, Unisyn Automate, and SoftVelocity's Clarion preferred. Send resumes to:

Midwest Toxicology
Services, Inc.
H.R. Manager
603 E Washington St.,
Suite 200
Indianapolis, IN 46204

Engineer (New York, NY): Develop/implement introspective & self-adaptive hardware & software sys. Design, implement & evaluate new program representations. Consult w/ engineers & clients to enhance reliability, scalability & performance. Design systems & techniques to map applications on architectures. Must have M.S. in Comp. Sci. or Elec. Eng., plus 1 yr. specific experience. Send resume to Melanie Peters, Business Manager, Reservoir Labs, Inc., 632 Broadway, Suite 803, New York, NY 10012.

Programmers needed. Seeking cand possessing BS or equiv and 2 years rel work exp. Our company will accept 1 year of post baccalaureate experience in lieu of 1 year of required years of experience. Duties include: Develop, modify and maintain programs using Microsoft Visual Studio.NET, C#, Java, SQL Server and other advanced technologies. Mail resume, refs and salary reqs to: Digital Designs, 1501 Charlotte Ave., Monroe, NC 28110.

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Senior Financial Consultant (DuPont, Research Triangle Park, NC) - Resp for design & implementation of new enterprise-wide SAP s/w syst. Resp for implementation incl debugging financial issues. Resp for stabilization of syst & implementing enhancements of upgrades as ID'd & req'd. Req. Bach in finance, acctg or business admin & 8 yrs exp in job offered or 8 yrs exp as supply chain coordinator &/or finance mgr &/or financial analyst, or no university degree & 10 yrs exp in job offered or related occupations. Exp must incl Microcircuit Material business incl precious metal pricing & leasing of precious metals. Must have exp working w/SAP as it applies to financial & controlling functions. Exp must incl financial statement analysis, site cost acctg, cash flow analysis, & P&L analysis; Excel & Access comp skills; 40 hrs/wk; salary commens w/exp. Resumes to Computerworld, 500 Old Conn Path, Framingham MA, 01701 Ref # 6452.

F/T Business Intelligence Developer. Work w/ Universe development, BCA Scheduling, Business Objects development, Oracle PL/SQL, Excel Analysis, development of BI systems in data warehousing, VBA Macro Coding in Business Objects, Application Foundation 3.x/6.x, Web Intelligence Server Administration 6.x, Business Objects Supervisor (5.x, 6.x), Web Intelligence SDK using Java Server Pages (JSP), Data Warehousing Methodology and Dimensional Modeling, PL/SQL, T-SQL, Microsoft SQL and Oracle. Must have a Bachelors Degree in Management. Foreign degree equivalent accepted. Must have 5 yrs of exp. in job offered or position w/ same duties. Send resume to: Kim Brown, 245 Perimeter Center Parkway, Ste. 600, Atlanta, GA 30346.

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Cisco Code

worse than has come out so far," he said.

Unidentified attackers last week stole an unspecified amount of source code for Cisco's Internetworking Operating System 12.3 and 12.3T software, which is widely used in switches and other networking equipment. A Russian Web site posted about 13MB of what it claimed was the stolen code on May 15, saying that as much as 800MB of code appeared to have been stolen.

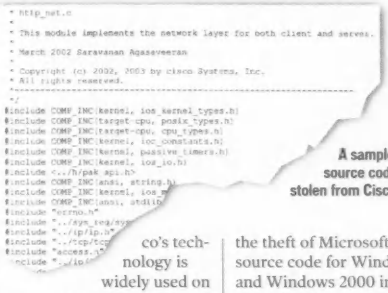
Alexander Antipov, a security expert at Moscow-based Positive Technologies, which owns the Web site that posted the code, claimed that the company downloaded it via a link provided over an Internet Relay Chat channel by someone using the online name Franz.

The supposed Cisco code samples, a copy of which was sent to *Computerworld*, were removed from Positive Technologies' site at Cisco's request on May 18, Antipov said.

In a prepared statement posted on its Web site last week, Cisco confirmed that a "portion" of IOS code had been illegally copied and publicly posted for several days. It appeared that the occurrence was not the result of flaw in any Cisco product or service, the note said. It is also unlikely that the action was taken by a Cisco employee or contractor, it added. The company refused to provide any further details, citing an ongoing investigation into the matter, but said it believed that "the improper publication of this information does not create increased risk to customers' Cisco equipment."

"We will continue to closely monitor this matter and provide updates as appropriate to customers," a company spokesman said.

The theft raises security concerns, especially since Cisco's technology is widely used on corporate networks, users said.



A sample of the source code allegedly stolen from Cisco

SOURCE: ALEXANDER ANTIPOV

"Now that the code is available to scrutinize, it will be easier to find holes to exploit," said Jon Duren, chief technology officer at IdleAire Technologies Corp., a Knoxville, Tenn.-based provider of electrification services.

"This issue has caused [us] to re-evaluate our access control lists on the routers, and on devices surrounding our routers, to ensure that they are solid," Duren said.

A similar incident involving the theft of Microsoft Corp. source code for Windows NT and Windows 2000 in February led to the discovery of a remotely executable flaw in the company's Internet Explorer browser software [QuickLink 44787].

The stolen Cisco code could be investigated for similar flaws or somehow exploited to create back doors or to fool users into downloading malicious patches or Trojan horse programs, security experts said.

In the Microsoft incident, the stolen code was freely available for download. In contrast, the Cisco source code hasn't resurfaced following its brief public airing on the Russian Web site.

Another difference between the two incidents is that the Cisco source code could be a lot more difficult to exploit than the Microsoft code, which was "complete and reasonably easy to work with," said Johannes Ullrich, chief technology officer at the SANS Internet Storm Center in Quincy, Mass.

"Just the same, we still have to be aware of the possibility of a security issue arising as a result of the theft," said Edward York, CTO at 724 Inc., an application service provider in Lompoc, Calif.

This is especially true given the lack of information coming from Cisco, users and analysts said. Gartner's Pescatore noted that the question that always gets raised when incidents such as this occur is, "If this got out, what else was going on?" **47039**

Continued from page 1

Sonar

help integrate functions within each of the four offerings.

In an interview last week, Yogesh Gupta, CA's chief technology officer, focused mainly on one of the new tools — an add-on to CA's Unicenter NSM product that's called SmartBPV, shorthand for Smart Business Process Views.

SmartBPV, which is in limited beta testing, is designed to automatically create and update graphical views of the servers, routers and other devices on corporate networks and show IT managers which business processes they support, Gupta said. For example, it could identify all the Microsoft Exchange servers on a network, as well as connected networking devices, he said.

"Once this SmartBPV is matured, it will be a big, big deal," said Chris Poole, a senior analyst at Convergys Corp. in Jacksonville, Fla., and president of the Florida CA Users Group. Poole said he wants systems management tools that can detect packets being sent across networks from specific applications or databases to help him quickly spot and locate problems when they arise.

Poole, who plans to attend this week's CA World conference in Las Vegas, said he envisions using SmartBPV to pinpoint a specific instance of an Oracle or SAP application that's encountering problems on a server that's running 10 different installations of the same application, for example. He said he is currently able to use the Unicenter tools only to locate the server that is reporting the trouble.

Other Sonar Tools

- **Unicenter Application Performance Monitor,** for identifying the IT components involved in transactions and monitoring response times. Due for beta testing this summer.
- **Change Impact Analyzer,** an add-on to Unicenter ServicePlus Service Desk for evaluating the business impact of planned network changes. Due this summer.

A Wider View

Hamed Omar, senior vice president of technology infrastructure at Sallie Mae Inc., said the educational loan provider has been running SmartBPV in a test lab for about six weeks and will probably roll it out in the fall.

Sallie Mae's network has about 10,000 components, said Omar, who works at the company's offices in Fishers, Ind. He noted that SmartBPV and related Unicenter tools should give him a view of all the network devices and how they relate to business processes, "so that when I make a change to a component, I know the complete business service at risk."

AmeriCredit Corp. may replace homegrown tools with SmartBPV, said Charles Kruse, vice president of IT services at the Fort Worth, Texas-based automobile financing firm. AmeriCredit wants to guarantee response times for Web-based loan applications and is deploying Unicenter NSM at its 90 branch offices to help make that possible, he said. Kruse added that the company's IT staff could use SmartBPV to make sure the branches have the network and computing resources they need should problems develop.

Sonar is based on technology CA bought from Raytheon Co. last year. The Sonar-based products CA is developing automate the process of data-packet analysis, said Dennis Drogseth, an analyst at Enterprise Management Associates Inc. in Boulder, Colo. Rival management tool vendors such as IBM and Hewlett-Packard Co. are working on similar technology, he said.

Also at the conference, CA will announce plans to better integrate its four main product lines. In addition, it will try to reassure users who have concerns about last month's ouster of Sanjay Kumar from his position as CEO in connection with investigations of CA's accounting practices [QuickLink 46761].

Poole, Omar and Kruse all said that they think CA is sufficiently addressing the management and accounting issues. **47022**

MORE MANAGEMENT APPS

Asset management software vendor Peregrine Systems will announce new products and pricing at its user conference:

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BPA ABM

FRANK HAYES ■ FRANKLY SPEAKING

So Much .junk

IT'S GOOD THAT Tim Berners-Lee has come out against creating lots of new top-level domains. In April, Berners-Lee wrote a white paper titled "New Top Level Domains Considered Harmful," in which he said adding new TLDs alongside .com, .org and .net should be done only after careful thought and when there's a clear benefit to users. He especially doesn't like the proposed .mobi TLD for Web pages aimed at cell phones and other mobile devices. And he repeated his criticism last week at the 13th International World Wide Web Conference in New York.

Of course, some people have been saying for years that new TLDs are a bad idea. Yes, Tim, it's good you've joined us.

But it's probably too late to matter.

OK, that's putting it too strongly. Berners-Lee invented the Web. When he speaks about the Internet, people pay attention. So it *does* matter that he thinks it's an especially bad idea to create a mobile-devices ghetto on the Web with .mobi. He's afraid we'll lose the device independence that's always a goal of the Web, even if it's not always perfectly achieved.

The whole idea is that you can see the same Web page on a PC, a TV screen, a handheld or any other Web device, no matter the screen size or resolution or other factors. Ghettoize mobile devices, and you've broken the way the Web functions. That's Tim's point, and he's right.

But Tim, where were you when we needed you — in 1997?

That was the year the Internet's movers and shakers decided we should have more domain names. *Lots* more. The Internet Society and the Internet Assigned Numbers Authority wrote the stupefyingly titled "Memorandum of Understanding on the Generic Top Level Domain Name Space of the Internet Domain Name System" (abbreviated — honest! — as gTLD-MoU).

The purpose of the gTLD-MoU was to push for more TLDs to join .com, .org and .net. How many more? Seven to start, but the gTLD-MoU-ers figured the Internet would eventually need *hundreds* of them "to provide a sufficiently rich name space as Internet exponential growth continues."

Too bad they weren't paying attention. By 1997, .com was already the default TLD for Web browsers and the preferred TLD for businesses. People didn't want .junk or .bunk at the end of their Web addresses. They wanted .com.

Users weren't pushing for more TLDs either. The biggest proponents of new TLDs were would-be registrars who figured .com was a gold mine, so there must be money in .junk too.

If Berners-Lee had come out forcefully in 1997 against adding lots of new TLDs, people might have listened. He might have been able to stop the .junk madness before all the lawsuits over which new TLDs to add, and when. And before businesses wasted so much money on .junk domain names they didn't need but had to buy to protect their trademarks.

Or maybe it wouldn't have mattered. In any case, we know how it turned out: The marketplace spoke, and it said "dot-com." The .junk TLDs never took off. They're still out there — they're just a nuisance.

And .mobi? Sure, it's good to have Berners-Lee campaigning against it. It's a bad idea to wall off "mobile" Web content from the rest of the Web. And not just because it breaks the Web's device independence.

It's a bad idea because it's another waste. Cell phones and wireless handhelds need less and less special treatment. Their connections keep getting faster. Their processors keep getting more powerful. Their screens keep getting bigger — and within a few years, we could have mobile devices with "virtual screens" an inch across that read like a 19-in. monitor.

Who'll need .mobi then? Nobody. It'll be just so much more .junk. 47009

FRANK HAYES, *Computerworld*'s senior news columnist, has covered IT for more than 20 years. Contact him at frank_hayes@computerworld.com.

SHARK TANK

Mission-critical

Programmer pilot fish takes over the critical code for transmitting settlements on a major e-commerce network. "I kept noticing one function in the link file output named OCRAP that didn't seem to be called anywhere," fish says. He finally tracks down the two-line long routine: "printf ("O crap, what am I doing here\n"); exit 1;" Says fish, "I renamed the code."

Open Door

Flashback to the days when mainframes had tubes, not transistors: This Defense Department agency site gets dinged on an inspection for inadequate computer-room security. "Six months later, we beamed with pride at our new high-security facility with mesh-reinforced glass windows, metal walls, jimmy-proof doors and supersecure locks," says a pilot fish there. "It was years before someone pointed out that the doors were installed with their hinges on the outside, requiring only a hammer and screwdriver to pop the hinge pins."

Just the Facts

Regional manager at a retail chain forgets his first laptop on a store counter. When he returns, it's gone, so he reports it stolen. "That night, he got a phone call from a person saying he was a police officer and they caught a man with his laptop," says an insider pilot fish. "The officer said the manager's business card was taped to the laptop, and if he knew the laptop's password, the officer would know it was his. The manager gave him the password. The officer said thank you and hung up. When the manager called the police back to ask when he could get his laptop, they replied, 'What laptop and what officer?' "

No Layoffs, Please!

It's Sarbanes-Oxley time, and this pilot fish checking data privacy rules finds an oddity: Certain transactions can be performed by only four users. But if those users' IDs are deleted, everyone in the company will have transaction permission. "In these days of massive layoffs, it could happen," says fish. "However, it's not often when a company wants all of its employees to have access to payroll transactions."

Thanks, Boss

Boss asks sysadmin pilot fish to write a request for bids for a telecom system. "I tell him I don't know much about this area and would like some guidance," says fish. "He says he's not going to help me – I should be able to do this on my own." But at the next meeting, boss has a new complaint: "He says I don't know what I'm doing," sighs fish, "and I am doing too much research."

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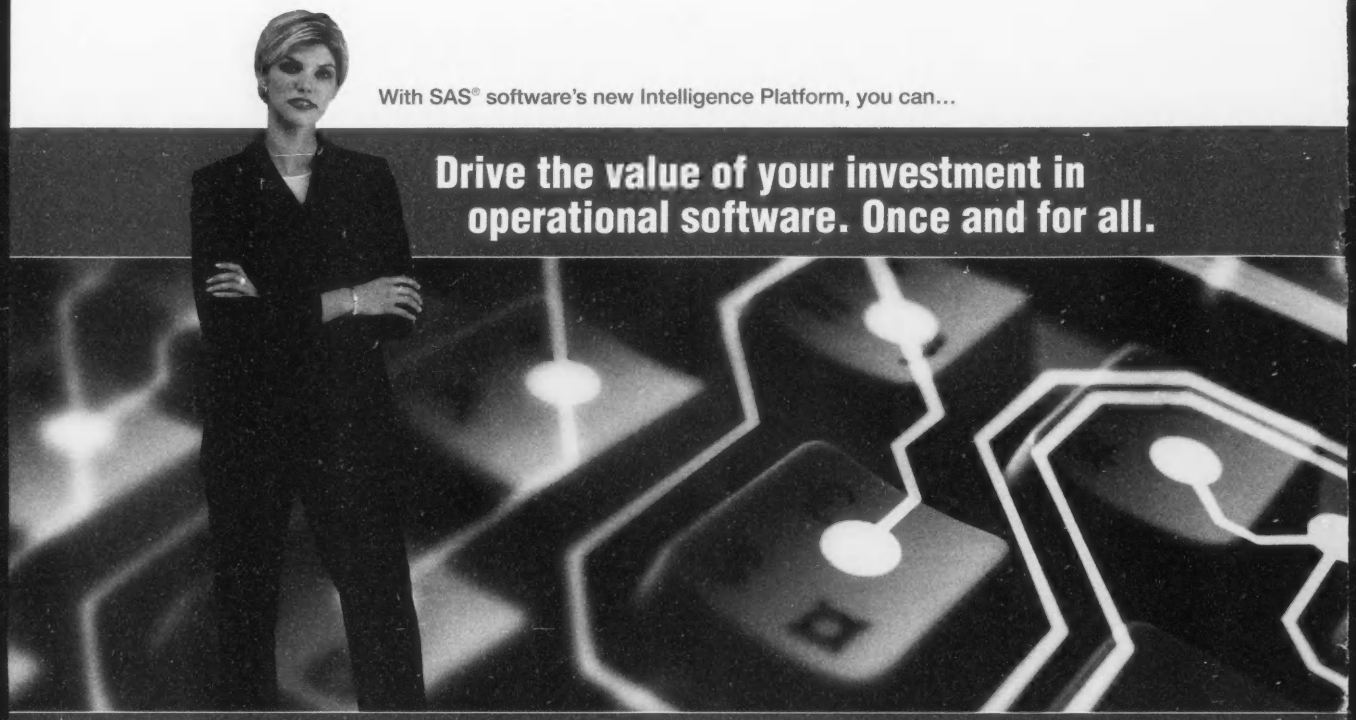

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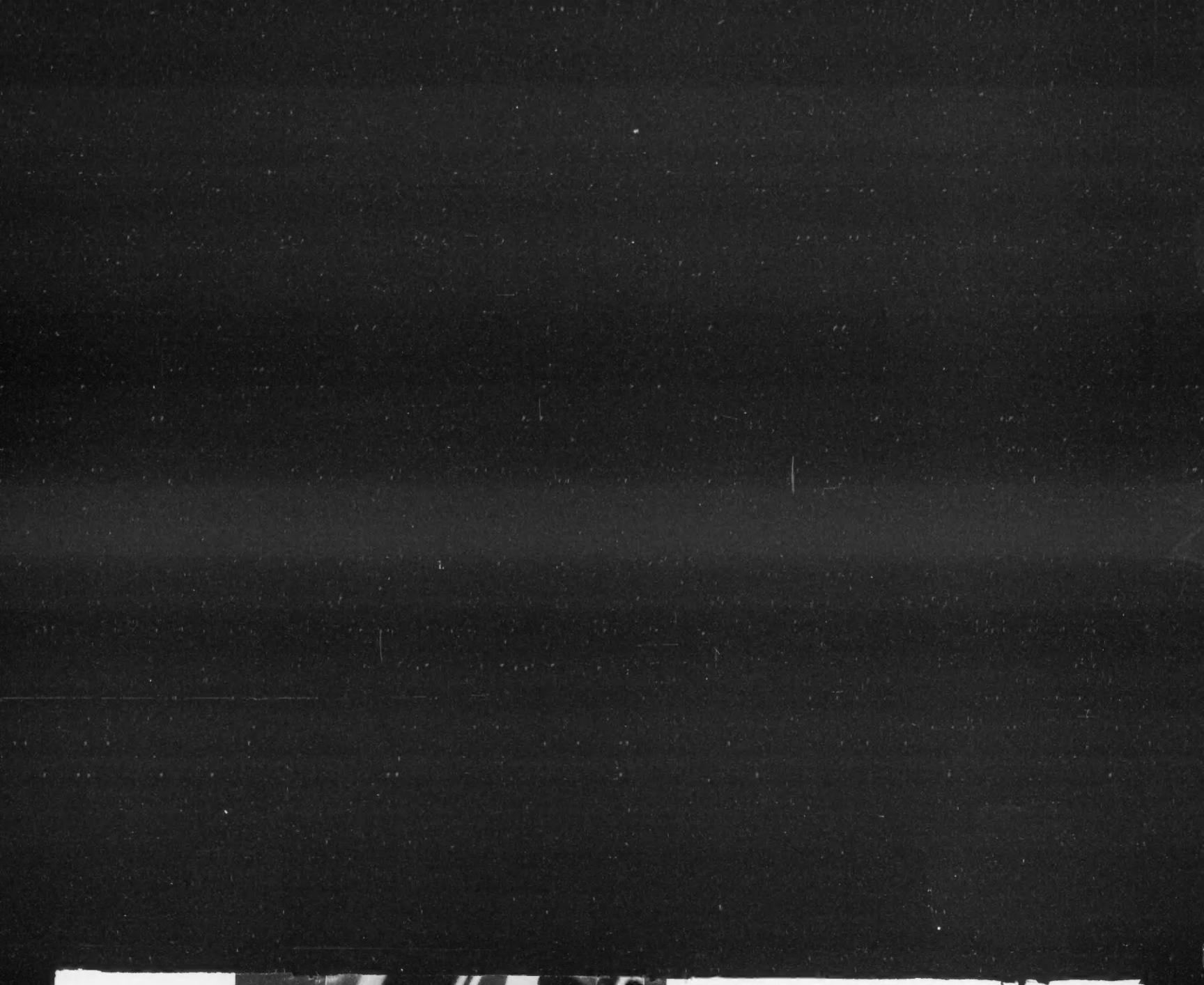
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